



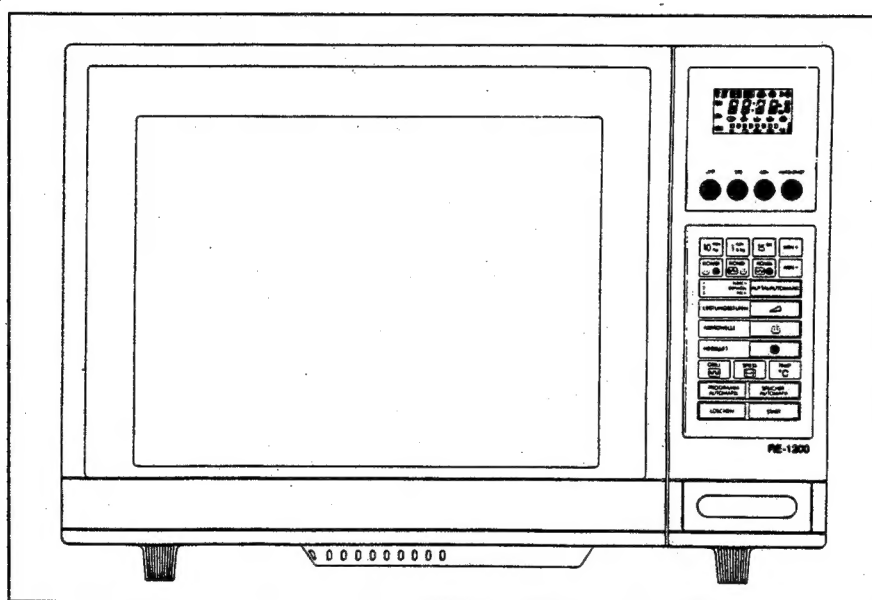
S. E. G

# SERVICE MANUAL

## MODEL:RE-1200

### 34L

## COMBINATION OVEN



## SPECIFICATIONS

Power Source	: 220~50Hz Single Phase
Power Consumption	: Microwave only; 1400W Convection(Heater); 1400W Grill(Heater); 1300W
Power Output	: 80~800W(5 Power Level)
Working Frequency	: 2450MHz
Timer	: 99 Minutes 95 Seconds
Cooling Method	: Air Cooling
Outside Dimensions	: 496(L)x588(W)x380(H) mm
Oven Cavity Dimensions	: 355(L)x355(W)x275(H) mm
Shipping Weight	: Approx. 36Kg

Specifications are subject to change without notice.

Technical service information contained herein is supplied solely for use by qualified service personnel trained in the repair of microwave equipment.

## **PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY**

1. Do not operate the oven or allow it to be operated with the door opened.
2. Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and then make repairs as necessary:
  - (A) Interlock operation.
  - (B) Proper door closing.
  - (C) Seal and sealing surfaces (arcing, wear, or other damages)
  - (D) Damage to or loosening of hinges and latches.
  - (E) Evidence of dropping or abuse.
3. Before turning on microwave power for service test or inspection inside the microwave generating compartments, check magnetron, wave guide or transmission-line, and cavity for proper alignment, integrity and connections.
4. Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired or adjusted by procedures described in this manual before releasing oven to the owner.
5. A microwave leakage check to verify compliance with Federal Performance Standard should be performed on each oven prior to releasing to the owner.

## **SAFETY CHECKS TO BE PERFORMED AFTER EACH SERVICE CALL**

For absolute safety of the user with interest in good service, the following safety checks should be performed upon the conclusion of any service to this appliance.

1. Check electric cord and plug. Ask user if improperly grounded wall receptacle is being used.
2. Check cord grounding lead to frame. Check for connection and continuity between ground terminal on plug and oven frame.
3. Check glass tray and guide roller for proper installation inside oven.
4. Make physical check of door for build-up of soil on door seals or any possible damage. Check door fit and adjustment according to the instructions.
5. Check latch switch and door safety switch interlocks according to the instructions.
6. Check microwave emission prior to servicing the oven if it is operative.

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## NECESSARY TOOLS AND MEASURING INSTRUMENTS

### 1. Necessary tools

Tools normally used for TV servicing are sufficient.

Standard tools are listed below.

- \* Diagonal pliers
- \* Philips head screwdriver
- \* Socket wrench (SIZE 8, 15mm)
- \* Nutdriver (SIZE 5.5, 7.8mm)
- \* Solder
- \* Vinyl insulation tape
- \* Long-nose pliers
- \* Slotted head screwdriver
- \* Adjustable wrench
- \* Soldering iron
- \* Polishing cloth

### 2. Necessary measuring instruments

- \* Tester (Volt D.C/A.C - ohm meter)
- \* Ruler
- \* Microwave energy survey meter
- \* 600cc glass beaker
- \* Glass thermometer 100°C or 212°F with alcohol column.
- \* Two 1 liter beakers.

# Proper Use and Precautions

## 1. For Safe Operation

Damage that allows the microwave energy(that cooks or) to expose will result in poor cooking and may cause serious injury to the operator.

IF ONE OF THE FOLLOWING CONDITIONS EXISTS, THE OPERATOR MUST NOT USE THE APPLIANCE.

(Only a trained service personnel should make repairs.)

- (A) A broken door hinge.
- (B) A broken door mesh plate.
- (C) A broken front panel to oven cavity.
- (D) A loosened door lock.
- (E) A broken door lock.

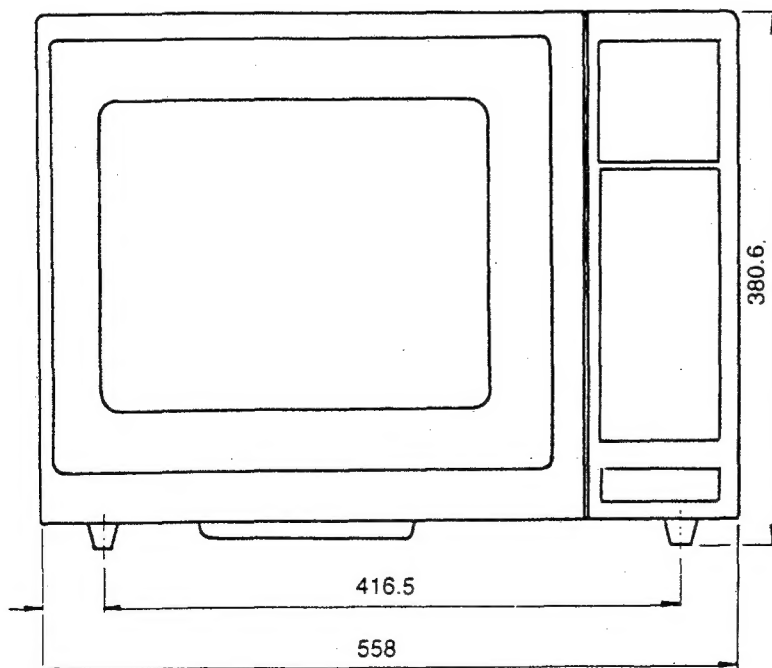
The door gasket plate and oven cavity surface should be kept clean. No grease, soil or spatter should be allowed to build up on these surfaces or inside the oven.

DO NOT ATTEMPT TO OPERATE THIS APPLIANCE WITH THE DOOR OPEN. Interlock switches are concealed from outside in order to avoid being touched by someone's mistake so that the operation of oven stops when the door is opened. Be cautious not to break them. Notice that you should not attempt any service unless you read this service manual.

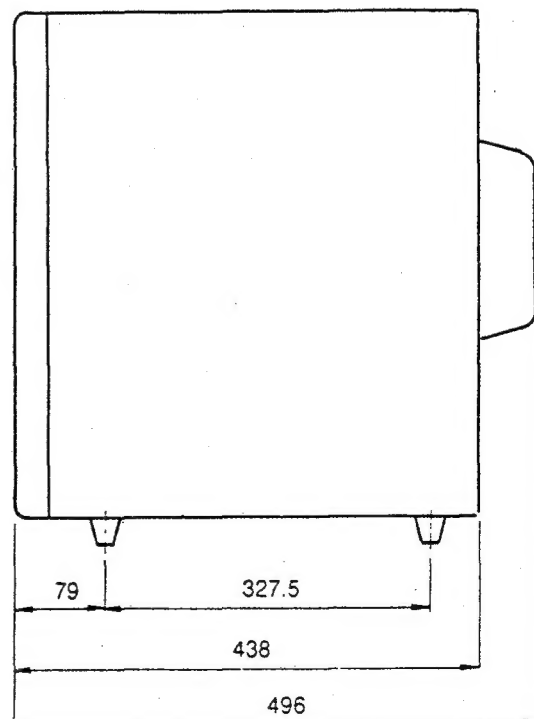
## 2. Correct Installation

- (A) This microwave oven weighs 36Kg and must be placed on a horizontal base strong enough to support the weight.
- (B) The oven should be placed as far from high temperature heat source and vapour as possible.
- (C) The power supply cord is 2m long. Grounding is required when connecting the power source.
- (D) Power consumption of this oven is approximately 2.9kW. It suggests that the unit is operated on such power line that can provide more power than this rating.
- (E) Objects must not be placed on the top enclosure so as not to obstruct air flow for ventilation.

## EXTERNAL VIEWS



(Fig. 1) Front View



(Fig. 2) Side View

# Circuit Descriptions

Refer to the wiring diagram on page 16.

## 1. When the food is placed inside the oven and the door is closed

- (A) The low voltage transformer supplies necessary voltage to the touch control circuit when the power cord is plugged in.
- (B) The primary interlock switch and the secondary interlock switch are closed.
- (C) The interlock monitor switch is opened. This interlock monitor switch acts to blow 15A fuse and stop magnetron oscillation when the door is opened during operation under an abnormal condition. (i.e. the contacts of primary interlock switch do not open and the contacts of secondary interlock switch do not close the circuit to stop oscillation)
- (D) The door key is caught by the door hook, the door sensing switch is opened to give touch control circuit the information that the door is closed.

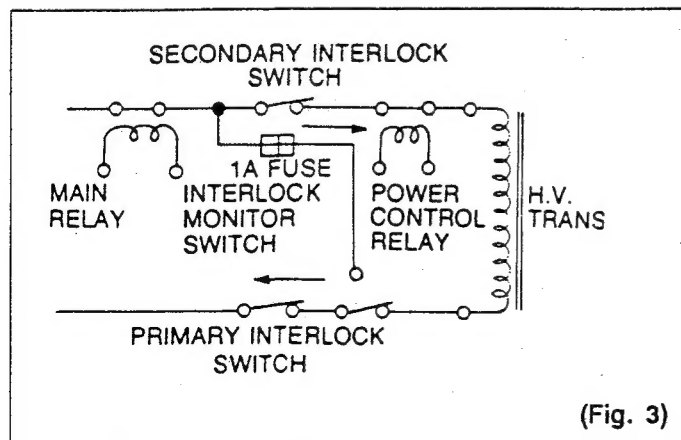
## 2. When cooking cycle, power and time are set by touching the function pads and the desired numerical pads

- (A) Cooking function word shown on the display window blinks to indicate the selected function.
- (B) The time set appears in the display window.
- (C) The touch control circuit stores the cooking data set.

## 3. When the START pad is touched

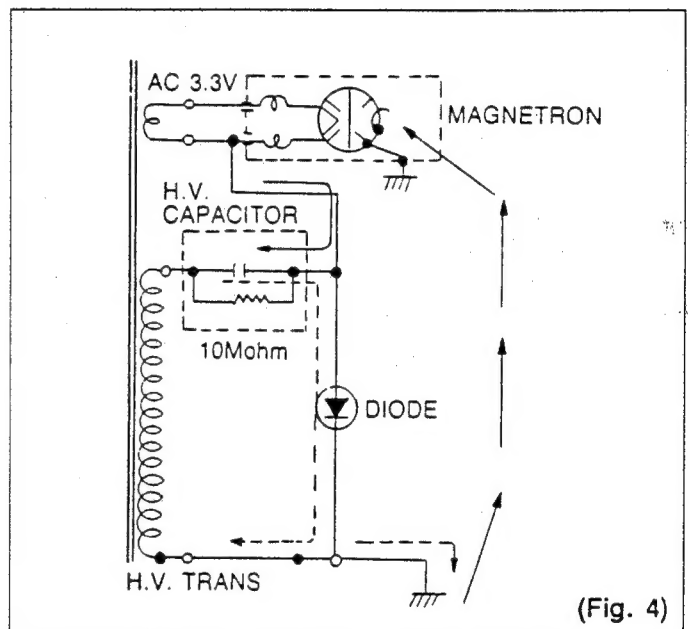
The main relay and the power control relay are controlled by the touch control circuit.

- (A) An oven lamp lights the inside of the oven by operation of the main relay in the Touch Control Circuit.
- (B) Fan motor rotates and cools the magnetron by blowing the air coming from the intake on the back panel over the magnetron fins. After cooling the fins, this air is directed into the oven to blow out the vapor.
- (C) 220VAC is applied to the high voltage transformer through the contacts of primary and secondary switches shown by the solid line just after the power control relay turns ON. (Fig. 3)



(Fig. 3)

- (D) 3.3V AC is generated from the filament winding of the high voltage transformer. This 3.3V is applied to the magnetron to heat the magnetron filament through two noise preventing choke coils.
- (E) High voltage of 2,120 volts AC is generated from the high voltage transformer secondary and this secondary voltage is increased by the action of the diode and the charging of the high voltage capacitor. This resultant D.C. voltage is then applied to the anode of the magnetron. As shown in the Fig. 4, the first half cycle of the high voltage produced in the secondary high voltage transformer charges the high voltage capacitor.



(Fig. 4)

Current flow is in the direction of the dotted line. During the second half cycle, the voltage produced by the transformer secondary and the charge of the high voltage capacitor are combined and applied to the magnetron as shown by the solid line so that oscillations begin. The disturbance wave generated from the magnetron is prevented by the choke coils of  $1.6\mu\text{H}$ , filter capacitors of  $500\text{pF}$  and the magnetron shielded case so that TV and radio programs are not impaired by noise.

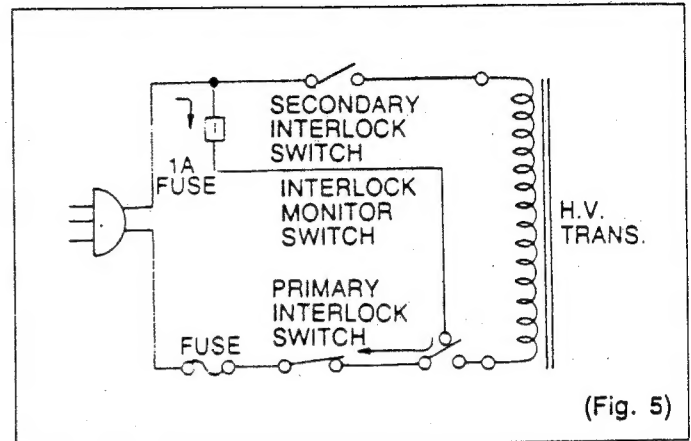
- (F) The power control relay is turned on intermittently by the touch control circuit, when the oven is set at any power selection except for full power. The touch control circuit controls the ON/OFF time of the power control relay in order to vary the output power of the microwave oven from "Low" to "Full" power. One complete ON/OFF cycle of the power control is 30 seconds. The relation between indications on the control panel and the output power level of the microwave oven is on the page 35.

# Circuit Descriptions

(G) The cooking time shown on the display starts to count down.

## 4. When the door is opened during cooking

- (A) The primary interlock switch and secondary interlock switch are opened to cut off the primary voltage of the high voltage transformer to stop microwave oscillation.
- (B) The door sensing switch is closed to give the door open information to touch control circuit. The main relay stays on, the power control relay turns off and the display stops counting down.
- (C) The fan motor and turn-table motor are stopped by operation of the primary or secondary interlock switch. But the oven lamp lights the inside of the oven again until the door is closed.
- (D) Upon opening the door, the contacts of primary interlock switch and secondary interlock switch open and the contacts of interlock monitor switch close the short circuit.
- (E) If the contacts of primary interlock switch and secondary interlock switch do not function properly, the 15A fuse blows out due to the large current surge caused by the monitor switch activation, and this in turn stops magnetron oscillation. (Fig. 5)



(Fig. 5)

## 5. When the CANCEL pad is touched during cooking

- (A) Once touching of the CANCEL pad stops the time cooking. Twice touching of the pad cancels all programs stored in the touch control circuit. The time of day reappears on the display window.
- (B) The oven lamp and cooking indicators turn off.
- (C) The fan motor stops.
- (D) The power control relay turns off to cut primary voltage to high voltage transformer so that the magnetron stops oscillation.

## CAUTIONS TO BE OBSERVED WHEN TROUBLESHOOTING

UNLIKE MANY OTHER APPLIANCES THE MICROWAVE OVEN IS A HIGH VOLTAGE AND HIGH CURRENT EQUIPMENT. THOUGH IT IS FREE FROM DANGER IN ORDINARY USE, EXTREME CARE SHOULD BE TAKEN DURING REPAIR.

## WARNING

PACEMAKER WEARERS MUST CONSULT THEIR PHYSICIAN BEFORE SERVING.

## CAUTION

SERVICEMEN SHOULD REMOVE THEIR WATCHES WHENEVER WORKING CLOSE TO OR REPLACING THE MAGNETRON.

# Cautions Observed When Troubleshooting

## CAUTION

SERVICEMEN SHOULD REMOVE THEIR WATCHES WHENEVER WORKING CLOSE TO OR REPLACING THE MAGNETRON.

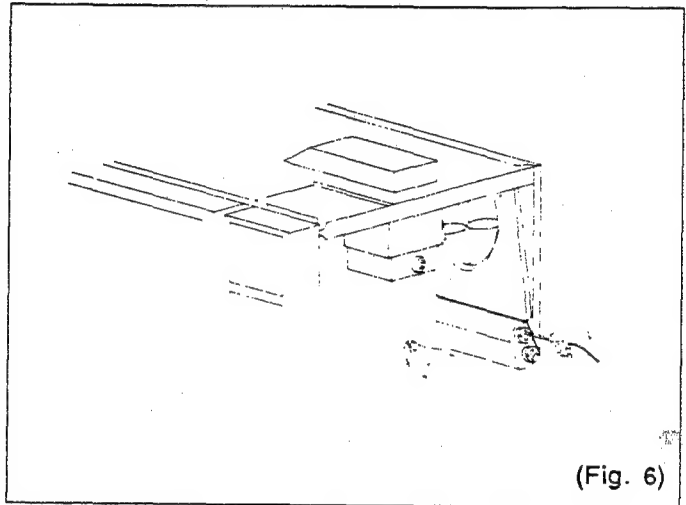
## IMPORTANT

### 1. Check the earthing.

Do not operate on a 2-Wire extension cord. The microwave oven is designed to be used when earthed. It is imperative, therefore, to make sure the oven is earthed properly before repair work.

### 2. Warning about the electric charge in the high voltage capacitor.

For about 30 seconds after the operation stops, an electric charge remains in the high voltage capacitor. When replacing or checking parts, be sure to short all the terminals between the oven chassis and the high voltage capacitor using a properly insulated jumper wire.



(Fig. 6)

## WARNING

THERE IS HIGH-VOLTAGE PRESENT, WITH HIGH-CURRENT CAPABILITIES IN THE CIRCUITS OF THE HIGH VOLTAGE TRANSFORMER SECONDARY AND FILAMENT TRANSFORMER SECONDARY. IT IS EXTREMELY DANGEROUS TO WORK ON OR NEAR THESE CIRCUITS WITH THE OVEN ENERGIZED.

### 3. When parts are replaced, must remove the power plug from the outlet.

### 4. When the 15Amp fuse is blown due to the operation of the Interlock Monitor Switch:

- (A) Replace the primary interlock switch, secondary interlock switch and interlock monitor switch. This is mandatory. Refer to page 24 for the measurement and adjustments for these switches.
- (B) When replacing the fuse, confirm that it has the appropriate rating for this model.

### 5. Avoid inserting nail, wire, etc. through any holes in the units during operation.

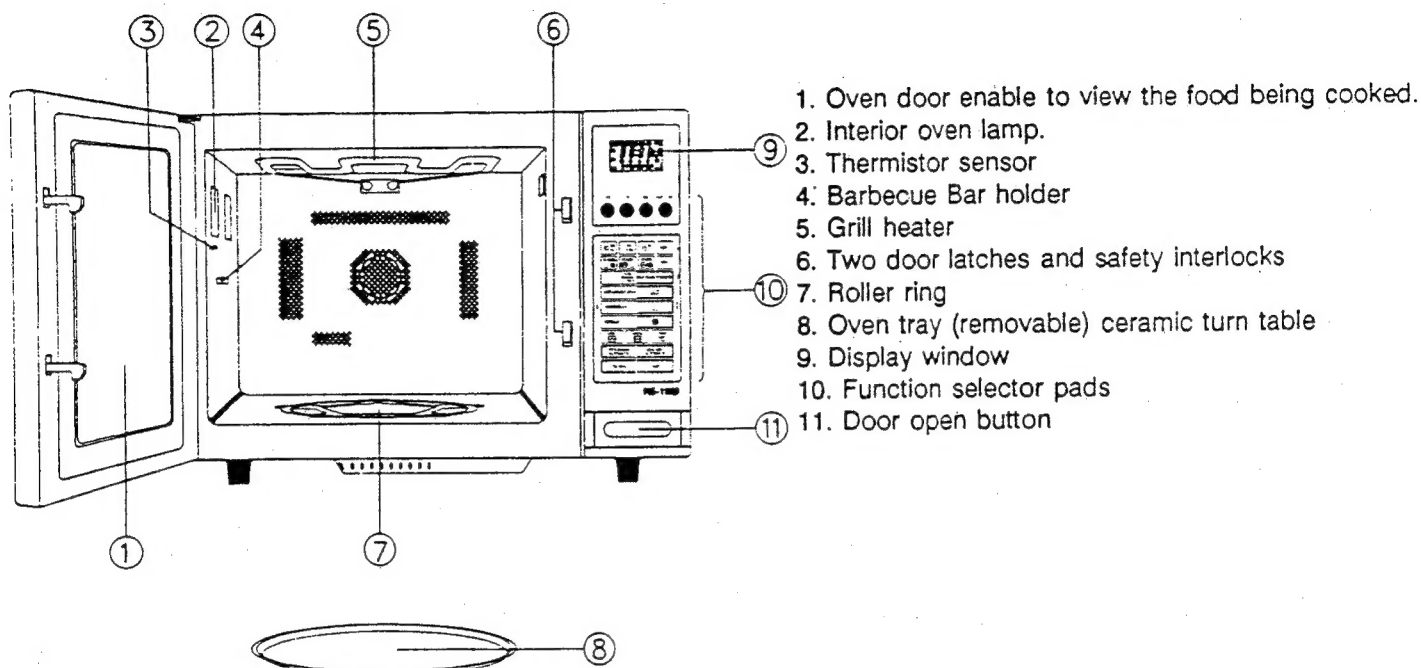
Never insert a wire, nail or any other metal object through the holes on the cavity or any other holes or gaps, because such objects may work as an antenna and cause microwave leakage.

### 6. Pacemaker wearers should consult their physician before attempting to service or repair a microwave oven. For additional information on this subject, write to the manufacturer of your pacemaker.

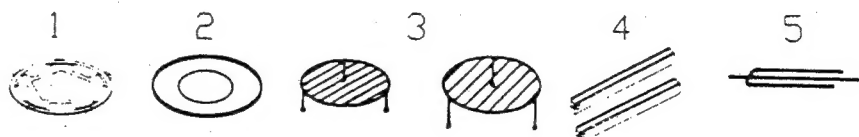
### 7. Confirm after repair.

- (A) After replacement of parts, make sure that the screws are neither loose nor missing. Microwaves might leak if the screws are not properly tightened.
- (B) Make sure that all electrical connections are tight before inserting the plug into the wall outlet.
- (C) Check for radiation leakage. (Refer to procedure for measuring radiation leakage pages 26 and 27.)

# Features



## ACCESSORIES



### 1. ROTATING BASE

This fits over the shaft in the centre of the oven floor. It should be puctually located on the spindle. Once the rotating base is fitted in position, it should only be removed for cleaning.

### 2. TURNTABLE TRAY

This should be placed on the rotating base. The wheels of the base should fit inside the centre rim of the tray. When correctly located you should be able to rotate it gently by hand. The turntable tray service as the main cooking surface. It is easily removed for cleaning.

NOTE: THE OVEN SHOULD NOT BE OPERATED WITHOUT THE BASE AND TURNTABLE.

### 3. METAL RACK

The rack is used to cook two dishes at once. A small dish may be placed on the turntable and a second dish on the tray. The metal racks should be used in convection or combination cooking.

### 4. HOLDER

After barbecue cooking, used to prevent danger from hot heat when taking out food.

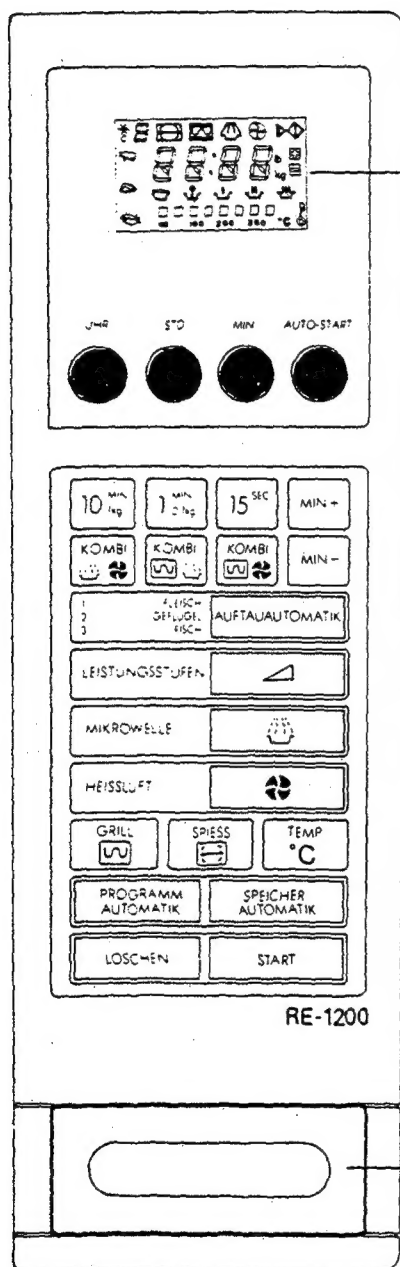
### 5. BARBECUE BAR

Used only for barbecue cooking.

NOTE: INSERT FOOD INTO THE BARBECUE BAR WITH BALANCE.



## CONTROL PANEL



### WINDOW DISPLAY AND INDICATOR LIGHTS

- \*Function Indicator Lights show which cooking function is being set or used.
- \*Digital Display shows the current time of day and left cooking time.
- \*Power indicator Light Indicates which power is being set or used.

### FUNCTION SELECTOR PADS

- \*Clock set, auto start
- \*Power Level select
- \*Microwave, Convection, Grill, Combination cook
- \*Auto Defrost
- \*Memory
- \*Program review
- \*Rotating spit
- \*Temperature Set
- \*Min Plus, Min Minus
- \*Cancel, start

### DOOR OPEN BUTTON

- \*Push to open the door
  - To stop the oven, operation
  - To put food on turntable
  - To take out food

# CONVERSION CHART (PAD NAME)

CLOCK = UHR, HR = STD, MIN = MIN, AUTO START = AUTO START, COMBI = KOMBI, WEIGHT DEFROST = AUFTAUAUTOMATIK, POWER LEVEL = LEISTUNGSTUFEN, MICROWAVE = MIKROWELLE, CONVECTION = HEISSLUFT, GRILL = GRILL, SPIT = SPIESS, TEMP = TEMP, PROGRAM REVIEW = PROGRAMM AUTOMATIK, MEMORY = SPEICHER AUTOMATIK, CANCEL = LÖSCHEN, START = START

## OPERATIONS

### SET THE CLOCK AS FOLLOWS


Step 1. Touch the CANCEL pad to cancel any programme and you will be in clock function.

Step 2. Touch the CLOCK pad.  
The colon between HOUR and MINUTE will blink on and off.

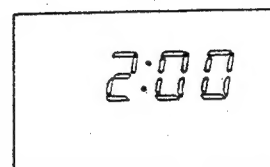
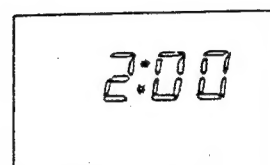
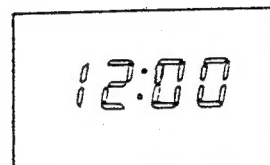
Step 3. Set the time by pressing the buttons marked HR and MIN. Keep pressing the buttons for the figures to roll on quickly.

Step 4. Touch the CLOCK pad.  
The clock is now set and then will flash continuously.  
The clock is now keeping time and will show on the display while oven is not operated.

If the oven is turned off from the mains for any reason the display will show all figures when it is switched again and you will have to re-set the clock.

At this time you can re-enter any data you want after the child locking indicator  disappears.

To recall the time during cooking, touch CLOCK and the present time of day will show on the display for a few seconds before it enter to the cooking programme.  
Your Combination oven has a built-in 24-hour clock.





### COOKING BY MICROWAVE

Microwave cooking is ideal for fishes, vegetables (fresh or frozen), sauces, steamed puddings, jams and preserves, rice, pastes, soups and drinks. You can also use the microwave mode for fast defrosting and re-heating of previously cooked food. Remember only to use microwave-safe utensils when you cook by microwave.


Step 1. Place food on turntable in oven. Never switch the microwave mode when the oven is empty.

Step 2. Close the oven door.

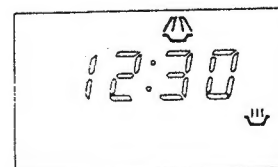
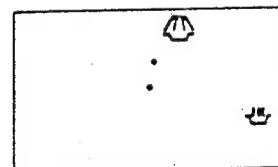
Step 3. Touch the MWO pad.  
The display will show  (microwave mode) and  (100% power).

Step 4. Set the length of cooking time by pressing the three pads marked 10 min, 1 min, 15sec.  
For Example: To set 12 minutes 30 seconds, press 10 min pad once, 1 min pad twice, 15 second pad twice.

Step 5. Select the required power level by pressing the power level pad.  
The power level indicators on the display will glow.

Step 6. Touch START (  ) pad.  
The lamp in the oven will illuminate and the turntable will start rotating. The microwave indicator will glow to show that the microwave cooking starts. The timer will count down.

Step 7. After cooking the timer beeps and the oven stops operating. And the display returns automatically to the present time.



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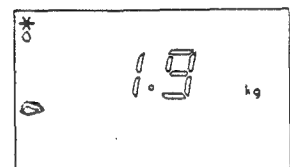
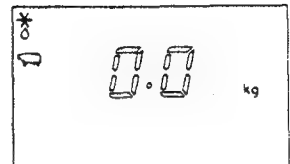
## AUTO WEIGHT DEFROST

**Step 1.** Select the type of food to be defrosted by pressing once, twice or three times on The WEIGHT DEFROST pad.

**Step 2.** Set the weight by pressing 1 kg and 0.1 kg pads.

The maximum weight lavailable to be programmed is up to 3.9 kg.

For Example: To defrost a chicken weighing 1.9 kg. Press WEIGHT DEFROST pad twice and then selected type ( ) will light up. To set the weight, press 1 kg pad once 0.1 kg pad nine times.



**Step 3.** Touch START pad.

The timer will count-down in second.

When defrosting is finished, four beeps will sound and the clock display will re-appear.

## CONVECTION COOKING

Convection cooking does not use microwave energy. Convection ovens are extremely efficient and heat up very quickly. The oven will reach maximum temperature in about 10 minutes. It is therefore recommended that you preheat the oven for about 5 minutes in COMBI (grill + convection) mode.

**Step 1.** Touch CONVECTION pad.

The convection indicator glows in red and the temperature will be automatically set at 250°C.

**Step 2.** Select the cooking time using the three control pads marked 10 min, 1 min and 15 sec.

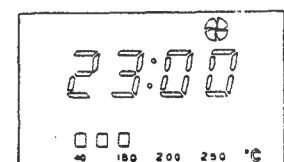
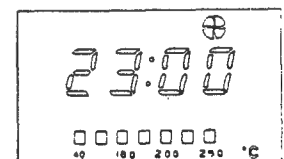
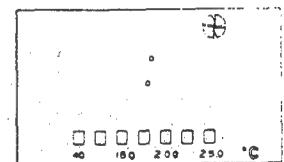
For Example: To set 23 minutes, press 10 min pad twice, 1 min pad three times.

**Step 3.** Touch TEMP pad if you require a cooking temperature between 40°C and 250°C. Keep pressing the pad and the temperature indicator will flash down until you reach the required temperature.

For Example: To obtain a cooking temperature 160°C, press TEMP pad four times.

**Step 4.** Touch START pad.

Convection cooking will start and the time display counts down the cooking time. The temperature indicator will flash until the required temperature is reached.



**Step 5.** When cooking is finished, four beeps will sound, the oven will switch off and the display will return to the present time of day. Open door and take out the food.

**CAUTION:** Use oven gloves when cooking in convection mode as the oven, cookware and utensils will be hot after being used.

## COOKWARE


Convection cooking does not require any special cookware. However you should take care with some cookware that you would normally use for microwaving, e.g., plastic containers, dishes, paper cups and towels etc. Only use cookware in convection mode that you would use in your conventional oven.

**NOTE:** Metal cookware such as cake etc. Can be used in convection mode. If metal cookwares or utensils are used in ANY OTHER mode microwave damage may be caused to the oven.

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## GRILL COOKING

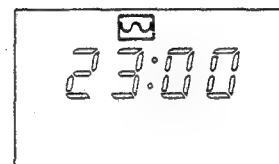
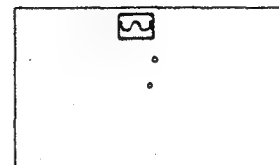
**Step 1.** Touch GRILL pad.  
The grill indicator (  ) appears.

**Step 2.** Select the cooking time using the three control pads marked 10 min, 1 min, 15 sec.

**For example:** To set 23 minutes, touch 10 min pad twice, 1 min pad three times.

**NOTE:** Grill cooking time can be set up to only 39 min. 95 sec.

Grill cooking does not use microwave energy. It is recommended to heat up the oven before grill cooking for about 10 minutes so that you may get the grill heater in red properly. For versatile grill cooking, you may use two kinds of metal rack in order to get the suitable temperature grill cooking but consult your cookbook for its correct use.



## COMBI (MICROWAVE + CONVECTION)

**Step 1.** Touch COMBI pad.  
The microwave and convection indicators (   ) glow and the temperature will be automatically set at 250°C.

**Step 2.** Select the cooking time using the 3 control pads marked 10 min, 1 min, 15 sec.

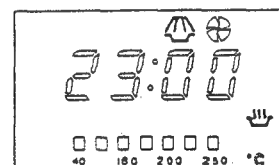
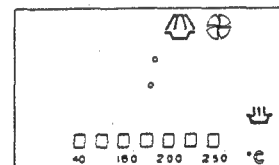
**For example:** To set 23 minutes, press 10 min pad twice, 1 min pad three times.

**Step 3.** Touch TEMP pad if you require a cooking temperature between 40°C and 150°C. Keep pressing and the temperature indicator will flash down until you reach the required temperature.

**Step 4.** Touch POWER pad if you want to change microwave power. Keep pressing and the power indicator will flash down until you reach the required power.

**Step 5.** Touch START pad.  
Combi-cooking will start and the time display counts down the cooking time. The temperature indicator will flash until the required temperature is reached.

**NOTE:** It is not necessary to pre-heat the oven because it is programmed automatically speed-heat by grillconvection mode up to the setting temperature the oven cuts out the grill-convection mode and operates in microwave-convection mode.



#### CONVERSION CHART (PAD NAME)

CLOCK = UHR, HR = STD, MIN = MIN, AUTO START = AUTO START, COMBI = KOMBI, WEIGHT DEFROST = AUFTAUAUTOMATIK, POWER LEVEL = LEISTUNGSTUFEN, MICROWAVE = MIKROWELLE, CONVECTION = HEISSLUFT, GRILL = GRILL, SPIT = SPIESS, TEMP = TEMP, PROGRAM REVIEW = PROGRAMM AUTOMATIK, MEMORY = SPEICHER AUTOMATIK, CANCEL = LÖSCHEN, START = START

### COMBI (MICROWAVE + GRILL)

**Step 1.** Touch COMBI pad.

The microwave and grill indicator (☐☐) glow.

**Step 2.** Select the cooking time using the 3 control pads marked 10 min, 1 min, 15 sec.  
For example: To set 23 minutes, touch 10 min pad twice, 1 min pad three times.

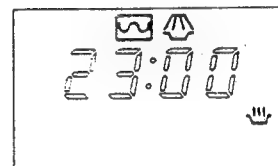
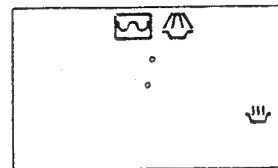
**Step 3.** Touch POWER pad if you want to change microwave power.

Keep pressing and the power indicator will flash down until you reach the required power.

**Step 4.** Touch START pad.

Combi-Cooking will start and the time display counts down the cooking time.

**NOTE:** COMBI (MICROWAVE + GRILL) cooking time can be set up to only 39 min, 95 sec.



### COMBI (GRILL + CONVECTION)

This function is very useful for fast pre-heating.

So, whenever you need to pre-heat the oven you can use this function to make it very quickly.

**Step 1.** Touch COMBI pad.

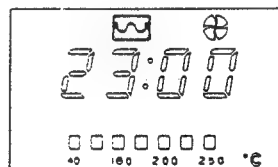
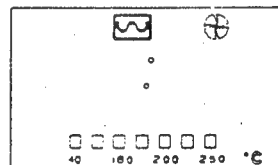
The grill and convection indicator (☐☐) glow in red and the temperature will be automatically set at 250°C.

**Step 2.** Select the cooking time using the three control pads marked 10 min, 1 min, 15 sec.  
—Cooking time can be set up to only 99 min, 95 sec.

**Step 3.** Touch TEMP pad if you require a cooking temperature between 40°C and 250°C.  
Keep press and the temperature indicator will flash down until it reach the required temperature.

**Step 4.** Touch START pad.

Combi-cooking will start and the time display counts down the cooking time. The temperature indicator will flash until the required temperature is reached.



### MEMORY COOKING

With the memory cooking method you can programme three of your favorite recipes, for up to each three stage.

**NOTE:** When programming three stages for one recipe, you must programme all times or all temperatures in the three stage equence.

#### CONVERSION CHART (PAD NAME)

CLOCK = UHR, HR = STD, MIN = MIN, AUTO START = AUTO START, COMBI = KOMBI, WEIGHT DEFROST = AUFTAUAUTOMATIK, POWER LEVEL = LEISTUNGSSTUFEN, MICROWAVE = MIKROWELLE, CONVECTION = HEISSLUFT, GRILL = GRILL, SPIT = SPIESS, TEMP = TEMP, PROGRAM REVIEW = PROGRAMM AUTOMATIK, MEMORY = SPEICHER AUTOMATIK, CANCEL = LÖSCHEN, START = START

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## MEMORY ENTRY

**Step 1.** Programme your favorite recipe by cooking procedures according to the instructions.

**Step 2.** If you want to memorycombicook follow page 9 procedure from step 1 to step 4 and touch memory pad. The display will show the little number-1, 2, 3 in red depending on pressing MEMORY pad once, twice or three times. Select your reference number (1, 2 or 3) for your favorite recipe which you are going to programme into the memory.

- The selected recipe number appears in the display window.
- The selected recipe number appears in the display window.

**Step 3.** Touch START pad.

Your favorite recipe is now set and entered in to the memory.

## MEMORY RECALL

**Step 1.** Touch MEMORY pad.

- If memory code is blinking in red, it means that the memory has nothing. On the other hand. If the memory has cooking recipes, you can see the memory code stops blinking.
- Select the memory code that you want to cook by pressing MEMORY pad repeatedly.

**Step 2.** Touch START pad.

- The oven will operate according to the instructions entered previously.
- To review the programmed recipes at anytime you want, touch PROGRAMME REVIEW pad.
- Then you have reviewed all the stages of those recipes.

**NOTE:** If the power of the oven is interrupted, MEMORY is lost and must be reprogrammed.

**NOTE:** If you want to change memory recipe, proceed above MEMORY ENTRY steps.

**NOTE:** If power to the oven is interrupted, MEMORY is lost and must be reprogrammed.

**NOTE:** If you want to change memory recipe, procedure above MEMORY ENTRY steps.

## QUICK START

When the oven is in clock-mode, touch MIN + pad once and the oven will switch on for 1 minute with full power (100%). If you need to increase the time, press MIN + pad during cooking. The number of presses will equal to the number of minutes.

## MIN + AND MIN -

The length of cooking time can be altered at anytime during cooking whether the oven is on weightdefrost, microwave, grill, convection or combination cooking function.

Touch MIN + or MIN - pad at anytime during cooking to either increase or decrease the length of cooking time with one or more minutes.

If you press MIN + or MIN - continuously the figures will roll on faster.

#### CONVERSION CHART (PAD NAME)

CLOCK = UHR, HR = STD, MIN = MIN, AUTO START = AUTO START, COMBI = KOMBI, WEIGHT DEFROST = AUFTAUAUTOMATIK, POWER LEVEL = LEISTUNGSSTUFEN, MICROWAVE = MIKROWELLE, CONVECTION = HEISSLUFT, GRILL = GRILL, SPIT = SPIESS, TEMP = TEMP, PROGRAM REVIEW = PROGRAMM AUTOMATIK, MEMORY = SPEICHER AUTOMATIK, CANCEL = LÖSCHEN, START = START

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## BARBECUE COOKING

Step 1. Insert the food into the barbecue bar.

Step 2. Close the door.

Step 3. Touch the cooking function you want.

Step 4. Touch the barbecue pad.  
The display will show (BB).

Step 5. Touch the start pad.

**NOTE:** While cooking you can stop or operate at anytime the barbecue bar by touching the barbecue pad alternately.

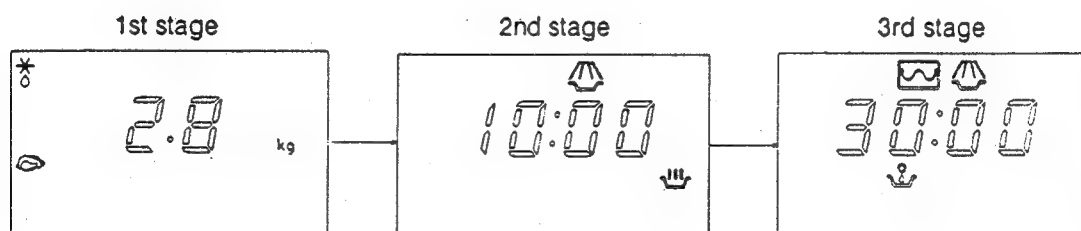
## PROGRAMME REVIEW

It is a great convenience to use PROGRAMME REVIEW when you want to know all the stages of recipe entered in sequence. When you touch PROGRAMME REVIEW pad, if there are cooking recipes entered, the display window will show the first stage for several seconds and next stages also appear automatically in the same way after the first stage.

**For Example:** Let's assume there is three stage cooking recipe entered to the oven as followings.

- AUTO DEFROST 2.8 kg of a chicken is in the 1st stage.
- MICROWAVE cooking for 10 minutes with full power is in the 2nd stage.
- MICROWAVE-GRILL COMBI for 30 minutes with 30% microwave power and 200°C is in the 3rd stage.

In this case, touch PROGRAMME REVIEW and then display window will show all the 3 stages for 2 or 3 seconds each in sequence.



## CONVERSION CHART (PAD NAME)

CLOCK = UHR, HR = STD, MIN = MIN, AUTO START = AUTO START, COMBI = KOMBI, WEIGHT DEFROST = AUFTAUAUTOMATIK, POWER LEVEL = LEISTUNGSSSTUFEN, MICROWAVE = MIKROWELLE, CONVECTION = HEISSLUFT, GRILL = GRILL, SPIT = SPIESS, TEMP = TEMP, PROGRAM REVIEW = PROGRAMM AUTOMATIK, MEMORY = SPEICHER AUTOMATIK, CANCEL = LÖSCHEN, START = START

## AUTO START

The AUTO START function allows you to start the oven automatically at any time within 24 hours of setting the controls. Once started the oven will automatically stop at the end of the pre-set cooking time. The best types of food to cook on AUTO START are those which are ready to cook and require no stirring.

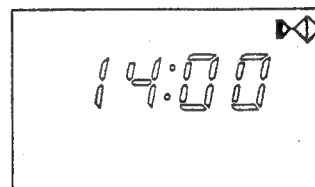
Assume the time is now 14:00 and you wish combination cooking to start at 19:00

Step 1. Place the food on the turntable in the oven.

Step 2. Close the oven door.

Step 3. Touch AUTO START pad.

The display changes to 14:00 and auto start indicator (▶◀) will appear.



Step 4. Enter the cooking 19:00 time you want cooking to start by touching HR, MIN pads.

Step 5. Enter the cooking procedure e.g., try the sequence in COMBINATION cooking as described on page 9 from step 1 to step 4.

Step 6. Touch START pad.

The display will return to the present time of day and the AUTO START indicator will flash, which means that a start cooking time has been programmed.

Step 7. Cooking will start at the pre-set time.

When cooking finished, four beeps will sound, the oven will switch off of itself and display will return to the present time of day. Open the door and take out the food.

**NOTE:** Once the AUTO START function is programmed you can not use the oven in the meantime. If you want to use your oven for something else before the pre-set starting time is reached, you have to cancel the AUTO START programmed by touching the CANCEL pad. You will then have to re-programme the AUTO START function if necessary.

## CHILD SAFETY PROGRAMME

Your combination microwave oven has a special programme for children's safe. This function can protect your microwave oven safe, brining any danger caused by an unfamiliar person's operation on microwave oven or while your going out.

You can lock the program whenever you want

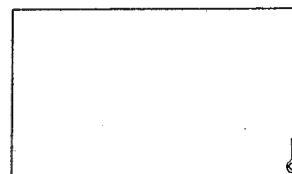
### HOW TO LOCK THE PROGRAMME

If you want to lock the programme, touch the microwave (M) and start pad (▶) at once. Then key indicator (K) appears and all programmes will be locked.

### HOW TO UNLOCKING THE PROGRAMME

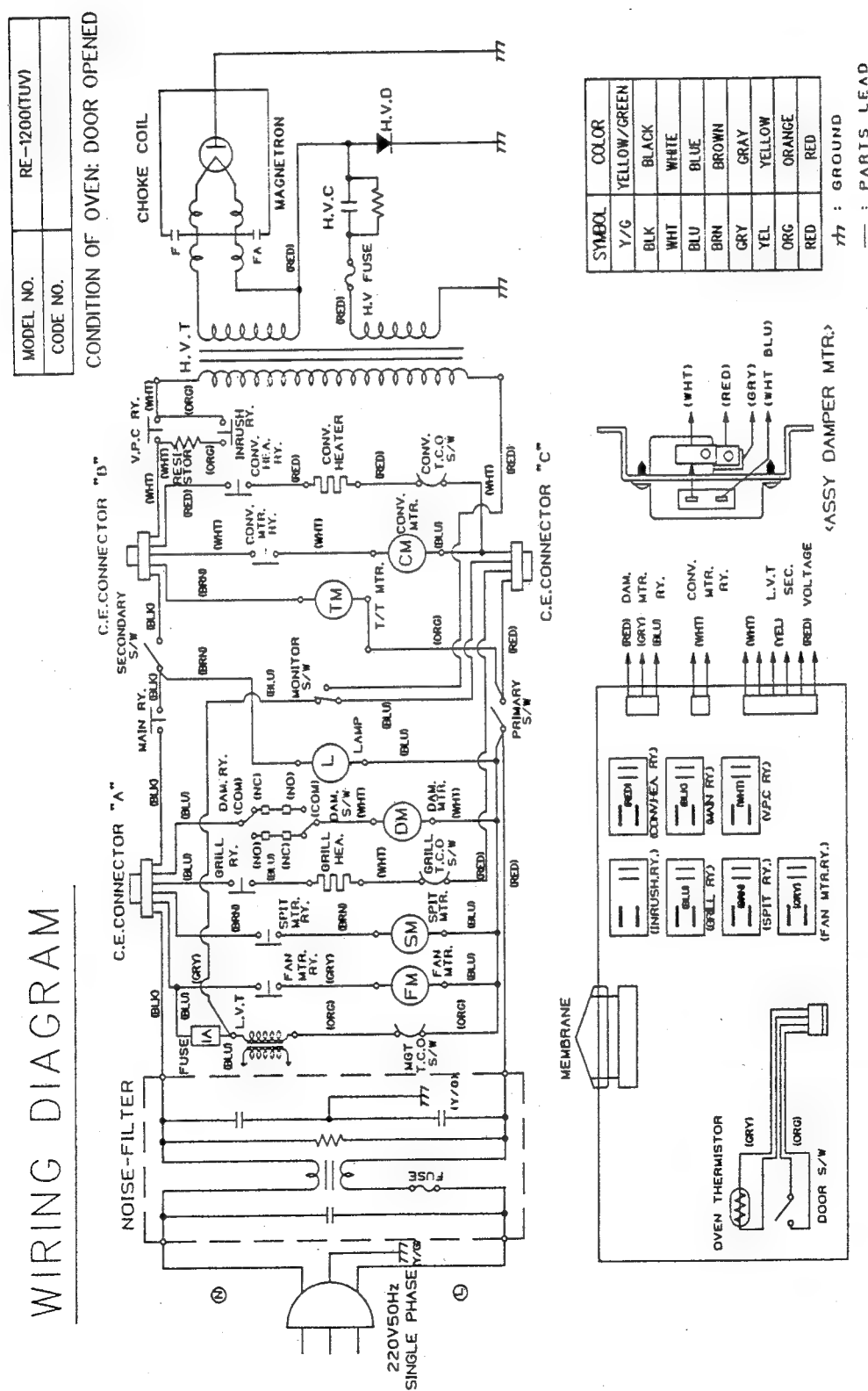
If you want to unlock the programme, touch the microwave (M) and cancel pad (◀) at once.

Then key indicator (K) will disappear.





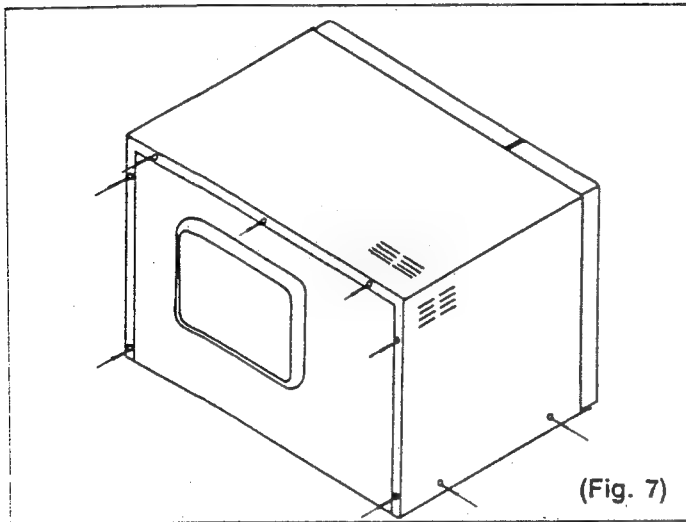
## Wiring Diagram



# Disassembly & Parts Replacement Procedure

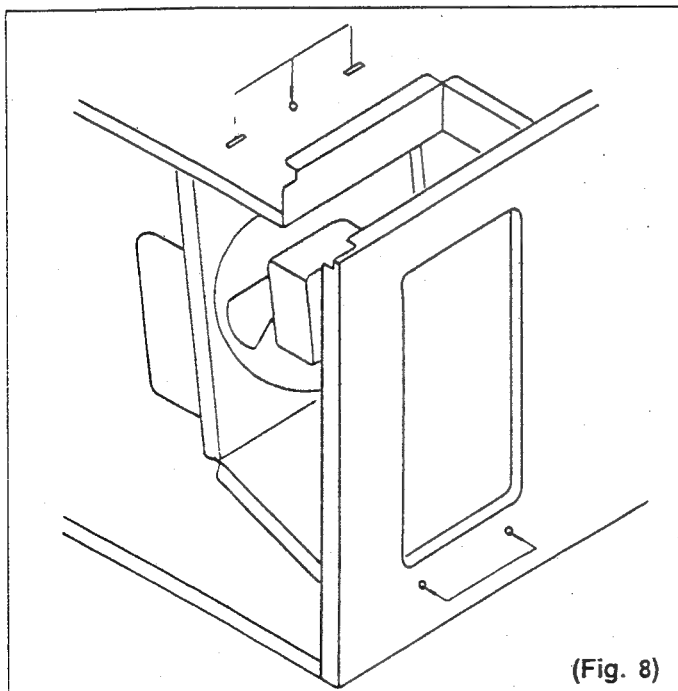
## 1. Cabinet Removal (Refer to Fig. 7)

- (A) Remove seven(7) screws from cabinet back.
- (B) Remove four(4) screws from cabinet side.



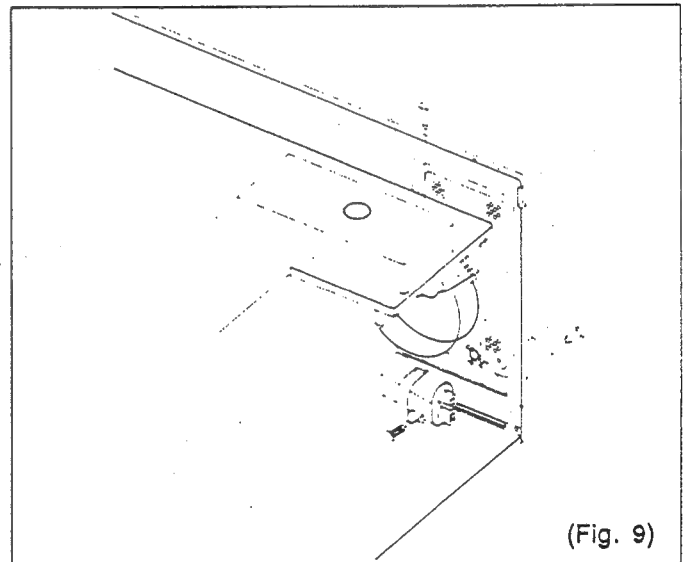
## 2. Fan Motor Removal (Refer to Fig. 8)

- (A) Remove the cabinet parts.
  - (B) Disconnect all connectors and terminals.
  - (C) Remove three(3) screws.
  - (D) Make flat two locking legs on the fan motor bracket with the nipper and draw the bracket out.
- AT THIS TIME, BE CAUTIOUS NOT TO BREAK THE LOCKING LEGS.



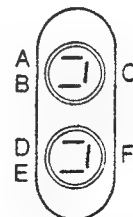
## 3. H.V. Capacitor Removal (Refer to Fig. 8, 9)

- (A) Remove the cabinet parts.
  - (B) Disconnect all connectors and terminals
  - (C) Remove three(3) screws from rear panel and upper cavity.
  - (D) Make flat two locking legs on the fan motor bracket by the nipper and draw the bracket out.
- AT THIS TIME, BE CAUTIOUS NOT TO BREAK THE LOCKING LEGS.
- (E) Remove one screw from the bracket of H.V. capacitor.
  - (F) Remove a capacitor bracket with capacitor.



### CAUTION:

H.V. Lead from transformer to capacitor must be connected to inside Terminal 'B', not 'A'.



- D: To H.V. Transformer Heater winding
- E: To H.V. Rectifier Diode
- F: To Magnetron

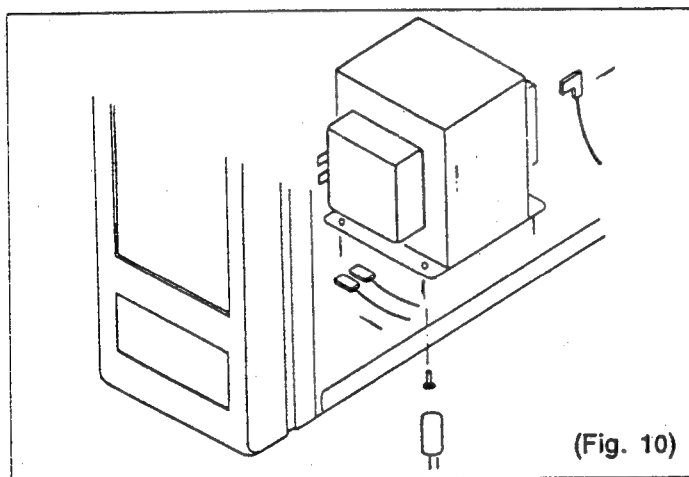
# Disassembly & Parts Replacement Procedure

## 4. Replacement of the high voltage transformer.

- Disconnect all the high voltage transformer leads.
- Remove the four mounting bolts of the high voltage transformer (Fig. 10).
- When replacing, connect the leads correctly and firmly.

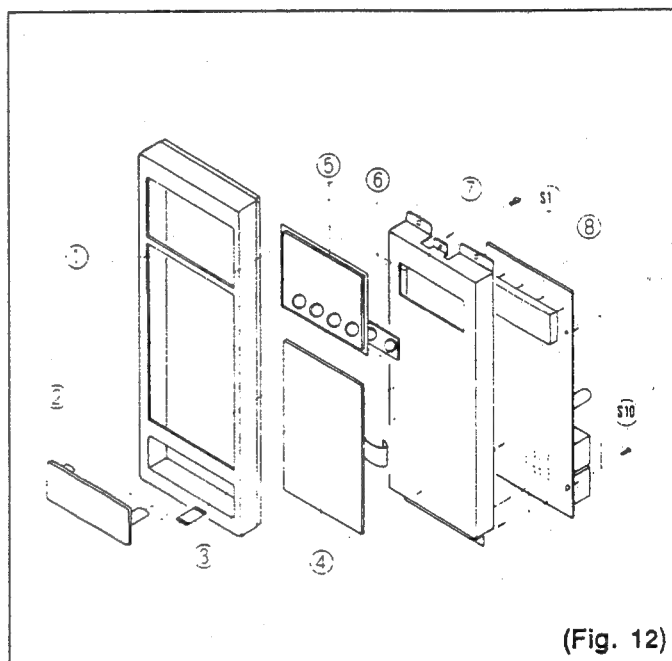
### CAUTION:

Filament leads connected to magnetron must be routed away from transformer core, primary winding, primary lead, primary terminal of transformer and any metal parts.



## 5-2. Key board Assembly and PC Board Assembly (Refer to Fig. 12, 13)

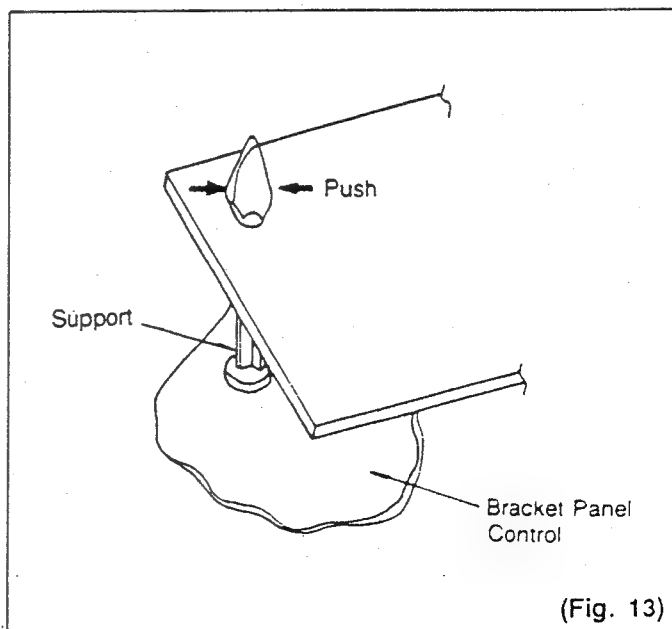
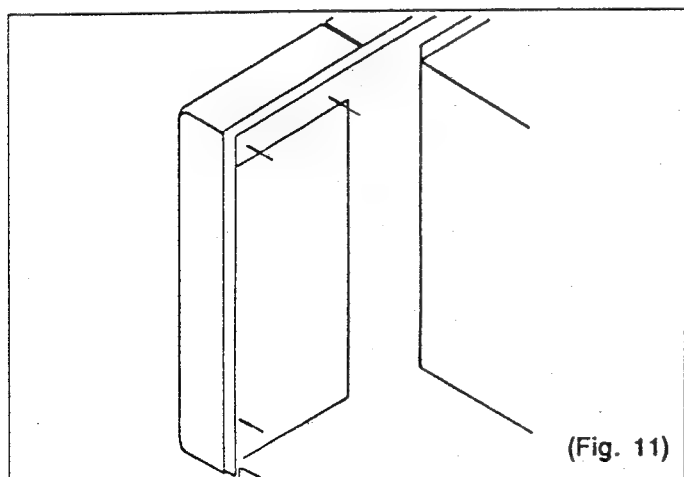
- Remove the control panel assembly as directed in "5-1 Control Panel Assembly Removal".
- Remove three screws 'S1' holding bracket panel control '7' to the panel control '1'.
- Disconnect the film connector from the P.C. Board Assembly '8'.
- Remove three(3) screws S10 P.C.B Assembly '8'.
- Pull out the membrane 4, window display 5 and rubber button door '2'.



## 5. Control Panel Assembly Removal

### 5-1. Control Panel Assembly (Refer to Fig. 11)

- Remove the cabinet parts.
- Remove the channel.
- Disconnect all connectors and terminals on the P.C. Board assembly.
- Remove three screws holding the panel assembly to the oven front.



# Disassembly Instructions

## 6. Magnetron Assembly Removal (Refer to Fig. 14)

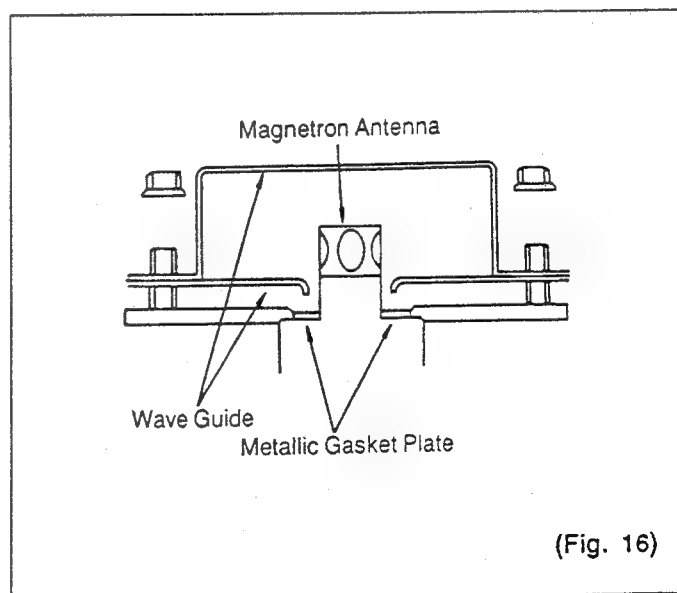
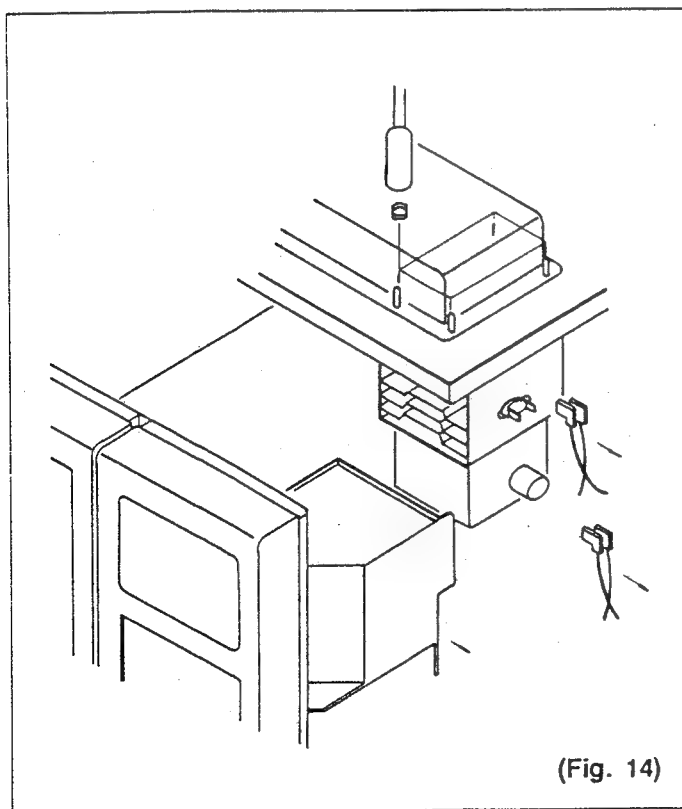
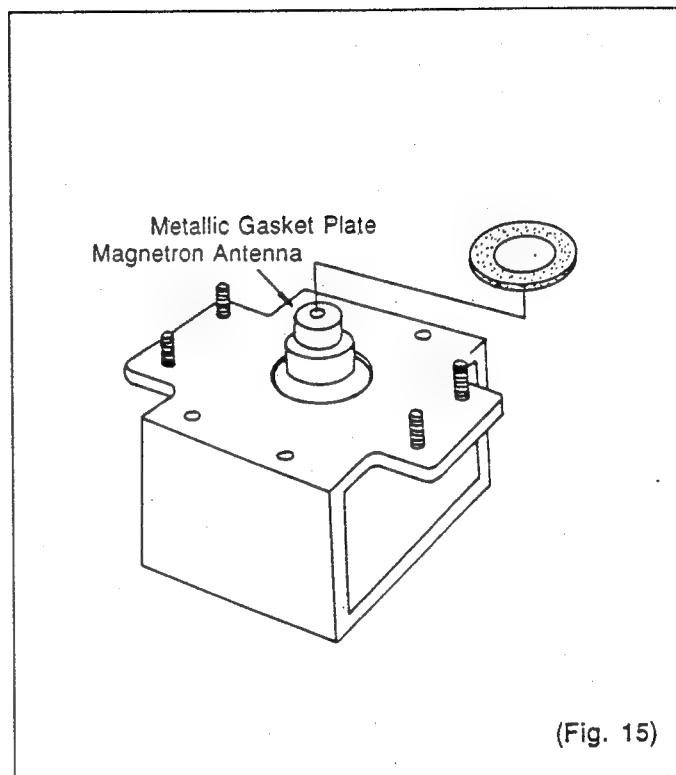
- (A) Remove the cabinet parts.
- (B) Remove the back plate.
- (C) Remove the support magnetron.
- (D) Disconnect all connectors from the magnetron and damper assembly.
- (E) Remove five(5) screws on damper assembly.
- (F) Remove two(2) screws holding the magnetron thermostat.
- (G) Remove four(4) flange nuts from magnetron hex bolts.

### CAUTION: MICROWAVE LEAKAGE

Never install the magnetron without the metallic gasket plate which is packed with each magnetron to prevent microwave leakage. (Refer to Figs. 15, 16)

Whenever repair work is carried out on magnetron, the microwave leakage should be checked according to the procedures specified in the "Microwave leakage Test" on page 27.

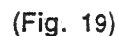
...DO NOT OPERATE WITHOUT CABINET...



- (A) Remove the cabinet parts.
- (B) Remove two(2) screws securing the top door hinge.
- (C) Remove three(3) screws securing the bottom door hinge.
- (D) Remove the door assembly.



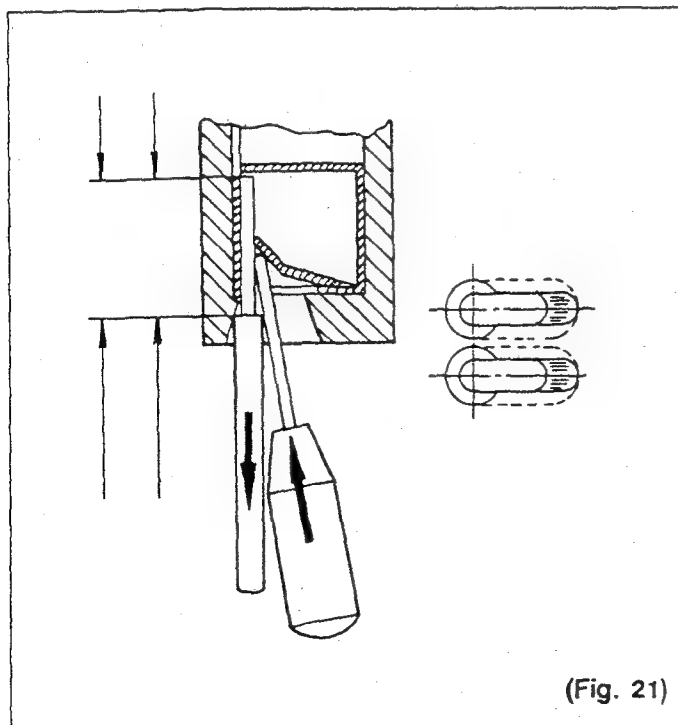
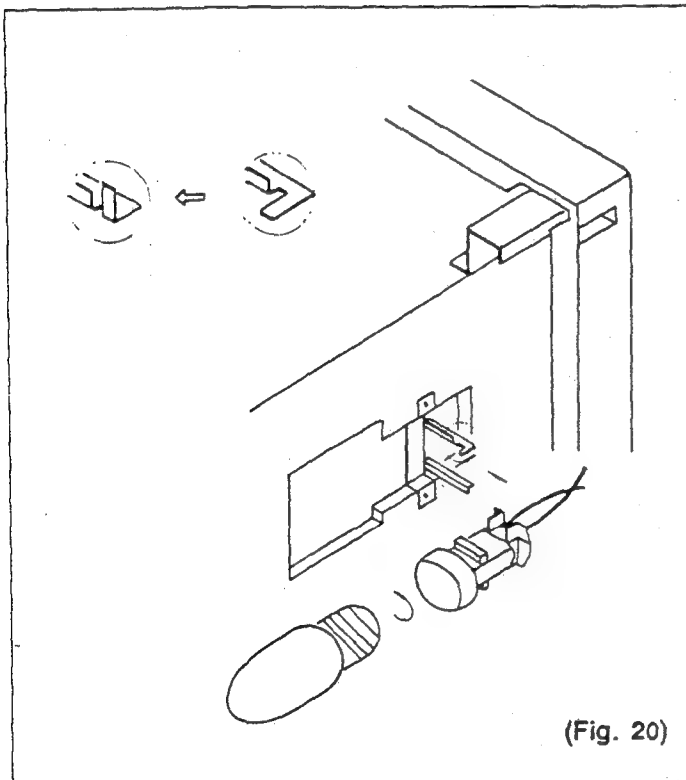
8. **Damper Assembly Removal (Refer to Fig. 18, 19)**
  - (A) Remove the cabinet parts.
  - (B) Remove the support magnetron.
  - (C) Disconnect all connectors from damper assembly.
  - (D) Remove five(5) screws S3, S1 on damper assembly.
  - (E) Remove the damper assembly.
  - (F) Remove three(3) screws S2.
  - (G) Remove the damper sub-assembly.
  - (H) Remove the CAM 8.
  - (I) Remove the clip 11 from damper pin-plate 9.
  - (J) Draw out the pin-plate 9 from damper assembly.
  - (K) Draw out the damper lever 10 from the damper cover 1.
  - (L) Remove the damper plate 2 with the damper rubber silicon 3.
  - (M) Remove the damper rubber silicon 3.
  - (N) Remove one screw S4 on micro switch 7.
  - (O) Remove the micro switch 7 and insulation sheet 6.
  - (P) Remove two(2) screws S5 on synchronous motor 4.
  - (Q) Remove the synchronous motor 4.



# Disassembly & Parts Replacement Procedure

## 9. Replacement of Lamp and Lamp Socket

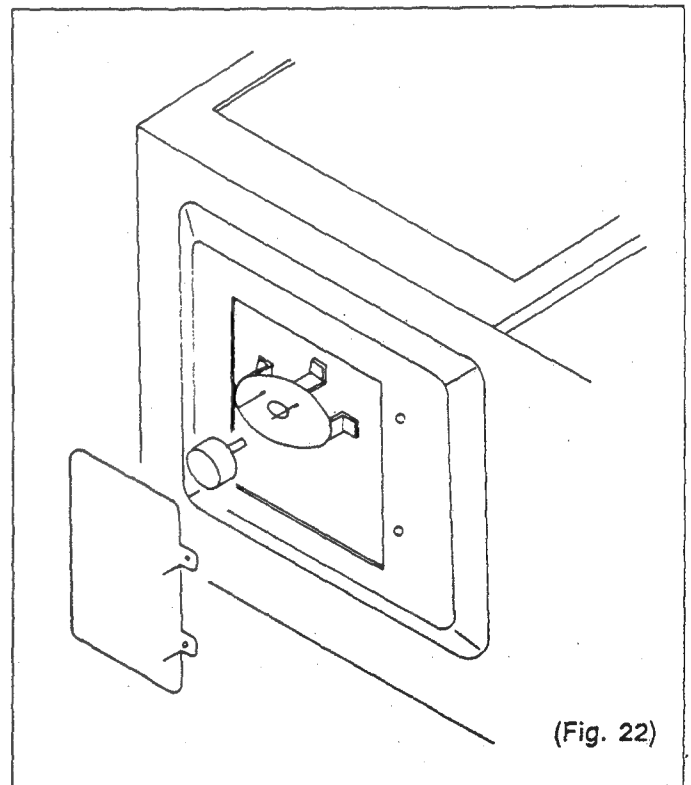
- (A) Remove the cabinet parts.
- (B) Turn the Rib of lamp bracket up. (Refer to Fig. 20)
- (C) Remove the lamp 220V, MAX. 20W.



- (D) Remove wiring in key opening or oval hole of lamp socket. (Refer to Fig. 21)
- Insert the pin or nail behind the wire. This will open the terminal tab and the wire can be drawn.

## 10. Turn-Table Motor Assembly Removal (Fig. 22)

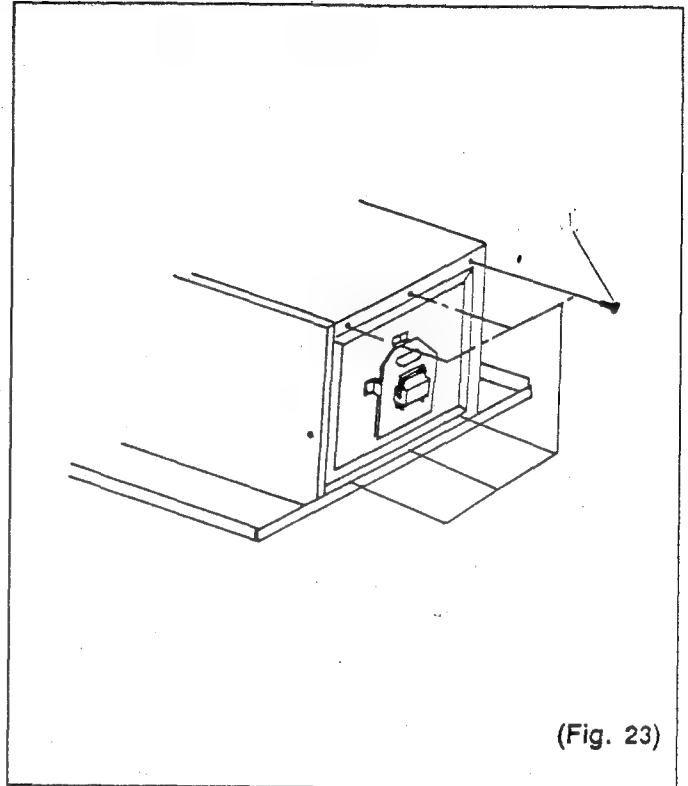
- (A) Remove two(2) screws on the drive motor cover.
- (B) Remove the drive motor cover.
- (C) Remove two(2) screws securing the drive motor to the cavity.
- (D) Take out the drive motor.
- (E) When replacing the drive motor, be sure to remount it in correct position.



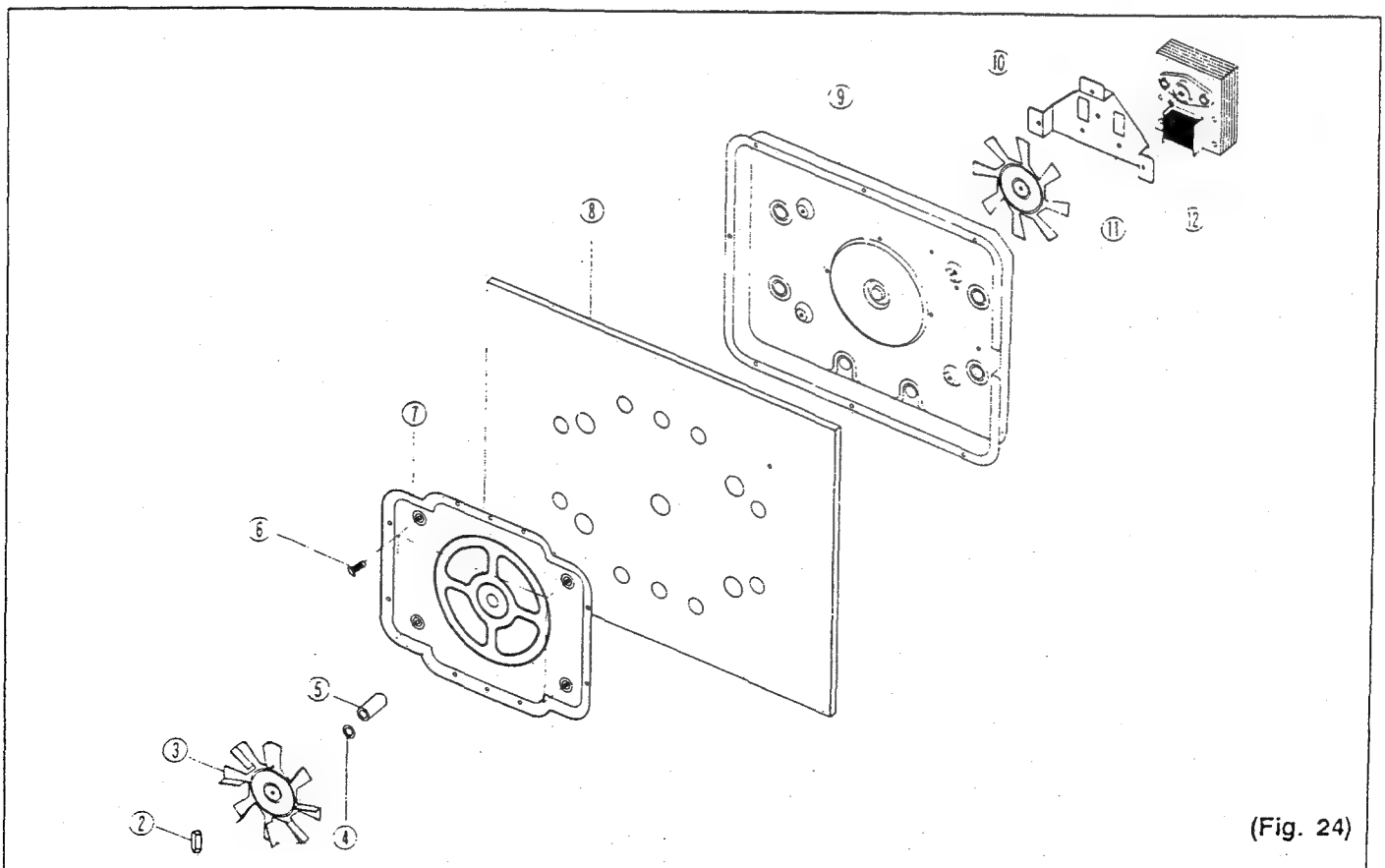
# Disassembly & Parts Replacement Procedure

## 11. Casing Assembly and Convection Heater Removal (Refer to Fig. 23, 24)

- (A) Remove the cabinet parts.
- (B) Remove the back-panel.
- (C) Disconnect all connectors and terminals.
- (D) Remove the air duct.
- (E) Remove the support-back.
- (F) Remove six(6) screws 1.
- (G) Remove nut 2.
- (H) Remove the blade fan 3, spring washer 4 and bushing 5.
- (I) Remove the convection assembly 11, 12 and cooling fan 10.
- (J) Remove four(4) screws 6.
- (K) Then the heater cover "A" 7, "B" 9 and heater adiabatic B will be disassembled.



(Fig. 23)



(Fig. 24)

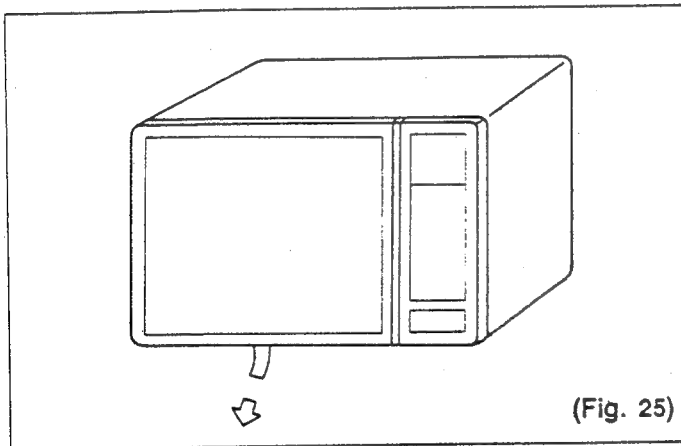
# Disassembly & Parts Replacement Procedure

## 12. Check the Gap between the Gasket Plate and the Door (Refer to Fig. 25)

- (A) Prepare a piece of paper and cut it approx. 24mm(1") wide by 100mm (4") long.
- (B) Open the door and put it on the oven front plate.
- (C) Close the door to hold it between the door gasket plate and the oven front.
- (D) Draw out the paper. If it is not drawn smoothly, the door gasket plate is in good condition.
- (E) Repeat above procedure at other several positions to check for possible gap around the door. But if any gap is found, adjust of the hinge and the latch positions of interlocks according to the steps described on No. 13 "Hinge and Latch Position Adjustment".

### NOTE:

Small gap may be acceptable if the microwave leakage does not exceed  $1\text{mW}/\text{cm}^2$ .

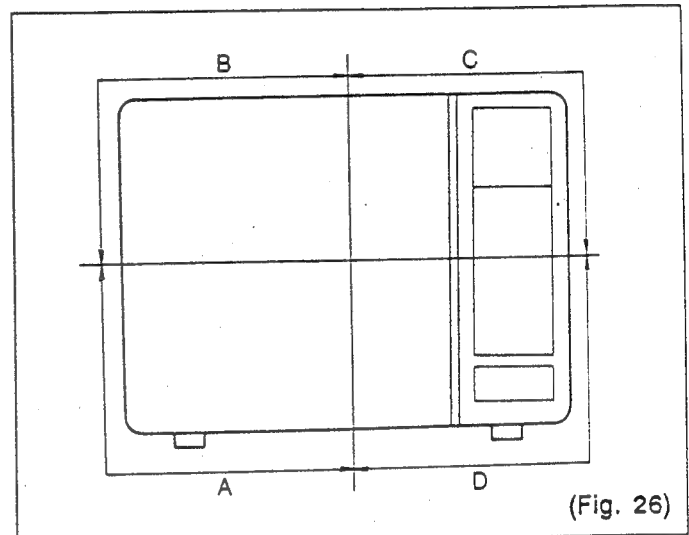


## 13. Hinge and Latch position Adjustment

(Method for the gap between the gasket plate and the oven front)

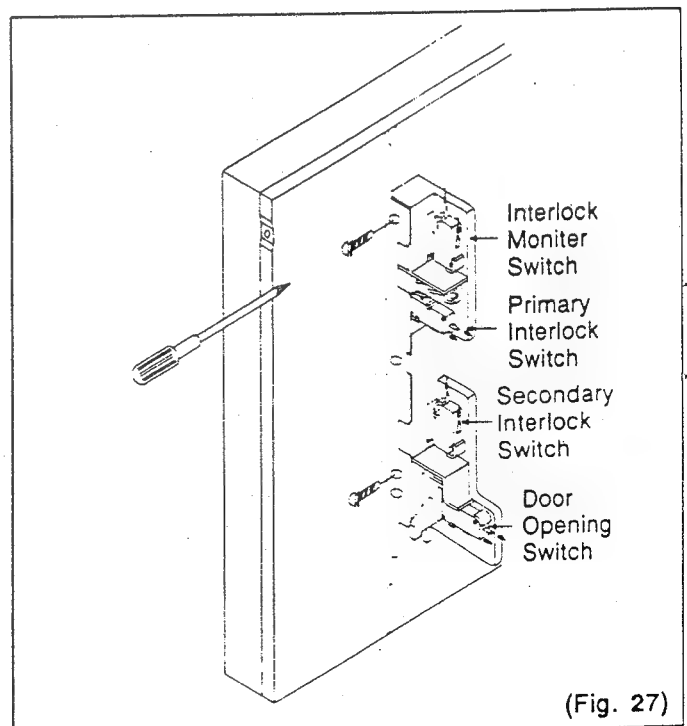
- (A) To reduce the gap of part "A". (See Fig. 26)
  - a. Loosen three(3) screws on bottom hinge, then push the door to contact the gasket plate to oven front.
  - b. Tighten three(3) screws.
  - c. Check the gap as No. 12.
- (B) To reduce the gap part "B". (See Fig. 26)
  - a. Loosen two screws on top hinge, then push the door to contact the gasket plate to oven front.
  - b. Tighten two screws.
  - c. Check the gap as No. 12.
- (C) To reduce the gap on part "C" and "D" (See Fig. 26)
  - a. Loosen two screws from the latch located on the right side of the oven. (See Fig. 27)

- b. Draw the latch inward slightly.
- c. Tighten two(2) screws.
- d. Check the gap as item 12.



## 14. Caution

Whenever the door parts are repaired or replaced or hinge and latch position are adjusted, check continuity of interlocks according to "Electrical continuity of interlock switches" on page 27 and check microwave leakage according to "Microwave Leakage test" on page 27.

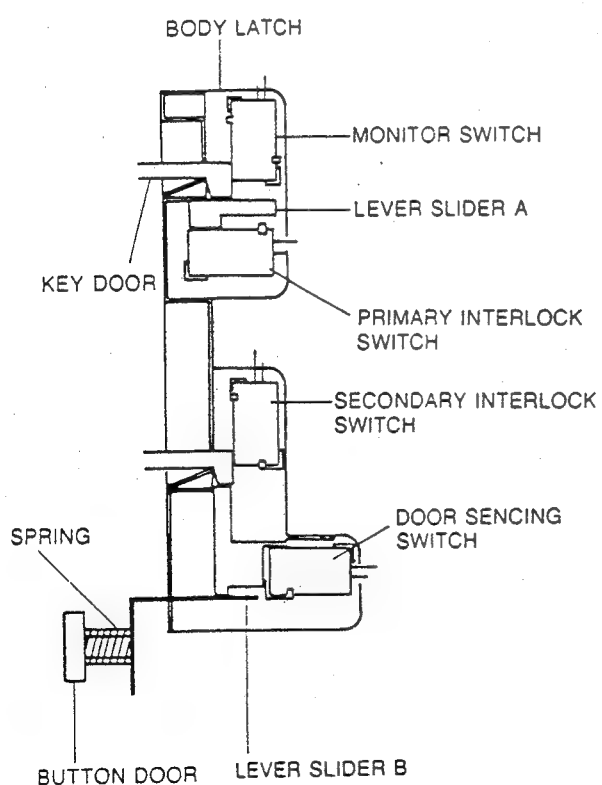




# Interlock Mechanism Functions & Adjustments

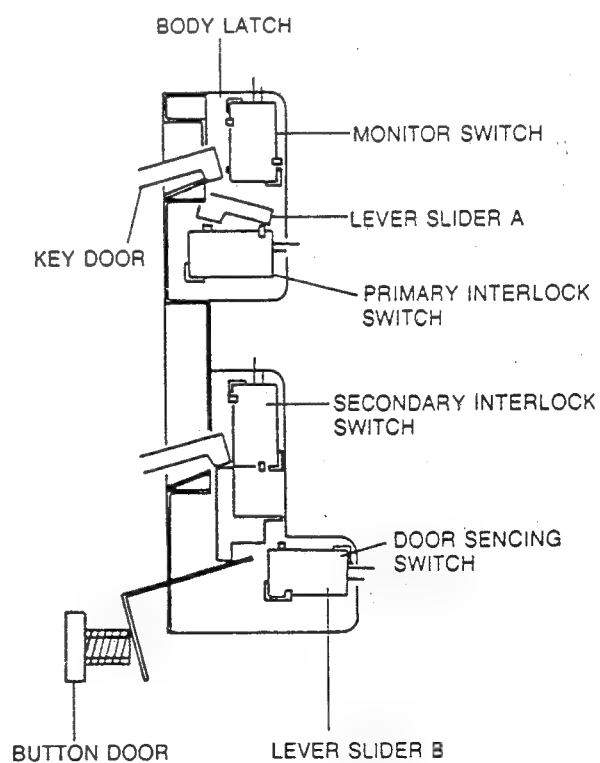
## WARNING

FOR CONTINUED PROTECTION AGAINST RADIATION HAZARD, REPLACE ONLY WITH IDENTICAL REPLACEMENT PARTS IN ACCORDANCE WITH THE WIRING DIAGRAM AND BE SURE TO USE THE CORRECT PART NUMBER FOR THE FOLLOWING SWITCHES: PRIMARY, SECONDARY INTERLOCK, AND INTERLOCK MONITOR. WHEN THE 15AMP FUSE IS BLOWN OUT DUE TO THE OPERATION OF INTERLOCK MONITOR SWITCH, YOU MUST REPLACE AT ONCE PRIMARY AND SECONDARY INTERLOCK SWITCHES AND INTERLOCK MONITOR SWITCH. THEN FOLLOW THE ADJUSTMENT PROCEDURES BELOW. AFTER COMPLETING NECESSARY REPAIR AND ADJUSTMENT, BE SURE TO CHECK THE CONTINUITY OF ALL INTERLOCK SWITCHES AND INTERLOCK MONITOR SWITCH.



Door Close

(Fig. 28)



Door Open

(Fig. 29)

# Interlock Mechanism Functions & Adjustments

The door lock mechanism is a device which is specially designed to completely eliminate microwave radiation when the door is opened during cooking so that can perfectly prevent the danger caused by the microwave leakage.

## 1. Interlock Mechanism Function

### 1-1. Mechanical Function

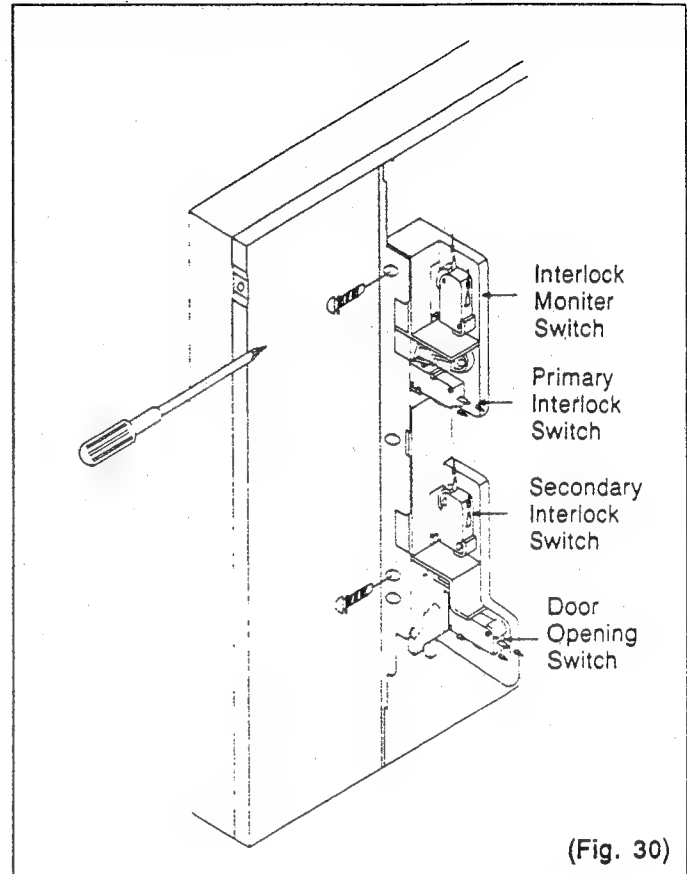
When the door is closed, the door keys make the oven door locked. If the door is not closed perfectly the oven will not operate. Fig. 28 shows the closed door condition. When the door is closed, the upper door key presses the actuator of interlock monitor switch and push the lever slider "A", then lever slider "A" presses the actuator of primary interlock switch. The lower door key operates with the same mechanism as the upper key.

### 1-2. Pushing the Door-Opening Button

If you push the door-opening button to open the door, it moves mechanically the lever slider "B" upward, which in turn raises the door key, the switch actuator and the levers upward, and turns off the interlock switches (primary and secondary interlock switches), then the interlock monitor switch is closed. (Refer to Fig. 29).

## 2. Cautions on adjustment (Refer to Fig. 30)

- (A) Loosen two screws securing the body latch switch and adjust the switch body position so that the interlock monitor switch opens before the primary interlock switch, secondary interlock switch and the door sensing switch close, when the door is closed tightly against the oven cavity front.
- (B) It is not necessary to adjust those switches because they are designed to fit without any adjustment.
- (C) Fasten the screws tightly.
- (D) Make sure the energy leakage is within the limit of the regulation ( $5\text{mW}/\text{cm}^2$ ) when measured by a detector. (All service adjustments should be made for minimum R.F. emission readings.)



**Interlock Switch Replacement** - In replacing faulty switches, be sure mounting tabs are not bent, broken or otherwise deficient in their ability to secure the switches in place.

# Measurements

## 1. Microwave Output Power

The output power of the magnetron can be simply measured by performing a water temperature rise test.

**Equipment needed for the test:**

- One 1-liter cylindrical borosilicate glass vessel (outside diameter of 190mm).
- One glass thermometer.

**NOTE:** Check the line voltage under load. Low voltage will lower the magnetron output. Make all temperature and time tests with accurate equipment.

- (A) Fill the one liter glass vessel with water.
- (B) Stir the water in glass vessel with the thermometer and record glass vessel's temperature. The glass vessel's temperature =  $T_1(10^\circ \pm 1^\circ\text{C})$ .
- (C) Place the glass vessel on the center of the cooking tray. Set the oven for high power and set 54 seconds. Heat the water for exactly 54 seconds.

(D) When the heating is finished, again stir the water with the thermometer and measure the temperature rise as  $T_2$ .

(E) Subtract  $T_1$  from  $T_2$ . This will give you the water temperature rise.

(F) The normal temperature rise for this model is  $9^\circ\text{C}$  to  $11^\circ\text{C}$  ( $48^\circ\text{F}$  to  $52^\circ\text{F}$ ) at the "HIGH" power setting.

**NOTE 1:** Variations or errors in the test procedure will cause a deviation in the temperature rise. Additional power test should be made if temperature rise is marginal.

**NOTE 2:** Output power in watts is computed by multiplying the temperature rise (step E) by a power factor of 80.5 in the case of centigrade temperature.

## CAUTION

### MICROWAVE RADIATION

PERSONNEL SHOULD NOT BE EXPOSED TO THE MICROWAVE ENERGY WHICH MAY RADIATE FROM THE MAGNETRON OR OTHER MICROWAVE GENERATING DEVICE IF IT IS IMPROPERLY USED OR CONNECTED. ALL INPUT AND OUTPUT MICROWAVE CONNECTIONS, WAVEGUIDE, FLANGES, AND GASKETS MUST BE SECURE. NEVER OPERATE THE DEVICE WITHOUT A MICROWAVE ENERGY ABSORBING LOAD ATTACHED. NEVER LOOK INTO AN OPEN WAVEGUIDE OR ANTENNA WHILE THE DEVICE IS ENERGIZED.

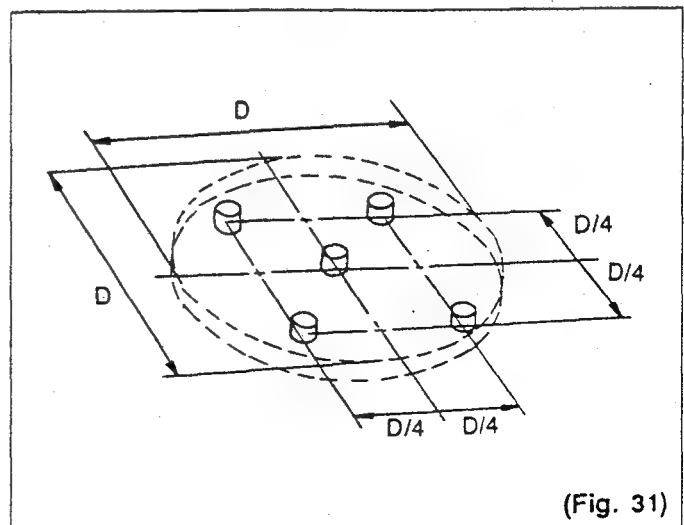
## 2. Microwave Heat Distribution - Heat Evenness

The microwave heat distribution can be checked by indirectly measuring the water temperature rises at certain positions in the oven as directed below.

- (A) Prepare five beakers made of 'Pyrex', having 100 milliliters capacity each.
- (B) Measure exactly 100 milliliters off water load with use of a measuring cylinder and pour it into each beaker.
- (C) Measure the temperature of each water load. (The readings shall be taken to the first place of decimals.)
- (D) Put each beaker in place on the cooking tray as illustrated in Fig. 31 and start heating.
- (E) After heating for 2 minutes, measure the temperatures of water in each beaker.
- (F) Microwave heat distribution rate can be obtained by the following formula.

$$\text{Heat distribution rate} = \frac{\text{Minimum temperature rise}}{\text{Maximum temperature rise}} \times 100(\%)$$

\* The result should exceed 65%.



(Fig. 31)

# Measurements

## 3. Electrical Continuity Check of Interlock Switches

### 3-1 Procedure

**NOTE :** Remove the power plug from the wall receptacle before testing.

#### (1) Primary Interlock Switch

- Disconnect two connectors from primary interlock switch.
- Connect the ohmmeter leads between the terminals of the primary interlock switch.
- Read the value of resistance between the terminals of the switch with the door opened and door closed.

#### (2) Secondary Interlock Switch

- Disconnect two connectors from secondary interlock switch.
- Connect the ohmmeter leads between the terminals of the secondary interlock switch.
- Read the value of resistance between the terminals of the switch with the door opened and door closed.

#### (3) Interlock Monitor Switch

- Disconnect the lead wire connecting the primary interlock switch and interlock monitor switch from primary interlock switch terminal.
- Connect the ohmmeter leads between the lead wire connector disconnected as item '1' and the power supply neutral plug pin.
- Read the value of resistance between the load wire connector and the power supply neutral plug pin, with the oven door opened and closed.

### 3-2 Judgement

The value of resistance should be applied to the value specified below.

Door	Open	Closed
Primary Interlock Switch	$\infty$	0
Secondary Interlock Switch	$\infty$	0
Interlock Monitor Switch	0	$\infty$
Door Sensing Switch	$\infty$	0

When the obtained value is not available, the switches should be replaced or adjusted again.

## 4. Microwave Leakage Test

### 4-1. Warning

- Do not place your hands in any suspected microwave leakage field unless the safe density level is known.
- Measure an unknown field with assured safety for microwave energy at any time.

(C) Slowly approach the unit when testing until the radiometer reads available leakage for the unit.

(D) Extreme care should be taken not to expose your eyes directly to the source of microwave energy.

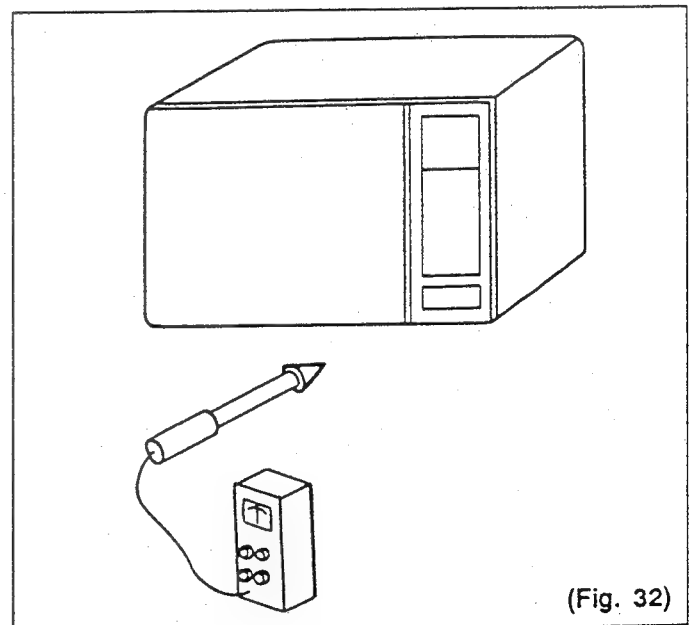
### 4-2. Method

The power density of the microwave leakage emitted by the microwave oven should not exceed  $1\text{mW}/\text{cm}^2$  at any point 50mm(2") or more away from the external surface of the oven as measured prior to acquisition by a purchaser. Once the oven is used the leakage should not exceed  $5\text{mW}/\text{cm}^2$  at any point 50mm(2") or more away on the external surface of the oven such as the door seal and main units. Measurements should be made with the oven operating at its maximum output and containing a load of  $275 \pm 15$  milliliter of tap water initially at  $20 \pm 5^\circ\text{C}$ .

### 4-3 Procedures

- Prepare 600cc glass on plastic container.
- Pour  $275 \pm 15$  milliliters of tap water initially at  $20 \pm 5^\circ\text{C}$  in the container.
- Place it at the center of the tray.
- Operate the oven.
- Measure the microwave leakage using a Narda 8100 or similar approved microwave leakage meter after a few minutes operation.

**NOTE:** The scan rate should not exceed 1 inch/sec.



(Fig. 32)

# Troubleshooting Guide of M.W.Oven

## DANGER OF HIGH VOLTAGE

4000 volts exist at the high voltage area. Do not operate the oven with the cabinet parts removed. Do not remove the cabinet parts unless the power cord is unplugged from wall outlet.

Determine whether or not any defect exists in the control panel block or others first.

The control panel assembly consists of Key Board Assembly and PC Board Assembly.

### 1. Troubleshooting by unit replacement according to the symptoms indicated

#### 1-1. Key Board Assembly

- (A) When touching the pads, a pad produces no signal at all.
- (B) When touching a numeral pad, two figures or more are displayed.
- (C) When touching any pads, sometimes the pad produces no signal.
- (D) Only one indicator does not light up.

#### 1-2. PC Board Assembly

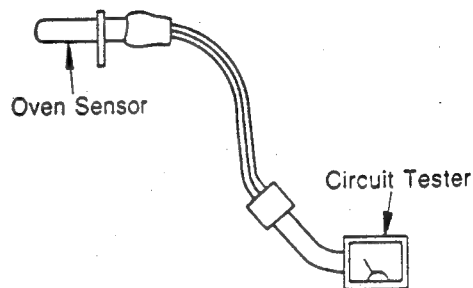
The following symptoms indicate a defective PC board assembly. Replace the PC board assembly.

- (A) In connection with keyboard
  - a. When touching any pad, a certain group of pads do not produce the signal.
  - b. When touching any pad, the pad produce no signal.
  - c. Clock does not operate properly.
- (B) Fluorescent Display
  - a. The corresponding segments of all digits do not light up, or they continue lighting up.
  - b. Wrong figure appears.
  - c. The figures of all digits flicker.
- (C) Other possible troubles
  - a. Buzzer does not sound or continues sounding.
  - b. When convection cooking, broil cooking or combination cooking is started, ERR 1 appears, then the oven sensor is fault.

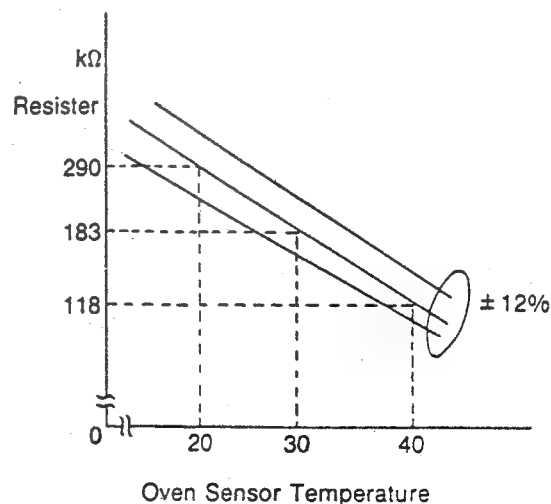
#### 1-3. Check the oven sensor

If the oven sensor does not fall into the value between maximum and minimum, it is fault.

(Example: Resistor is  $219K\Omega \pm 12\%$  at  $25^{\circ}\text{C}$ . Refer to Fig. 33, 34).



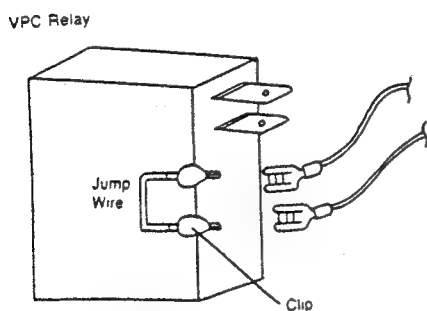
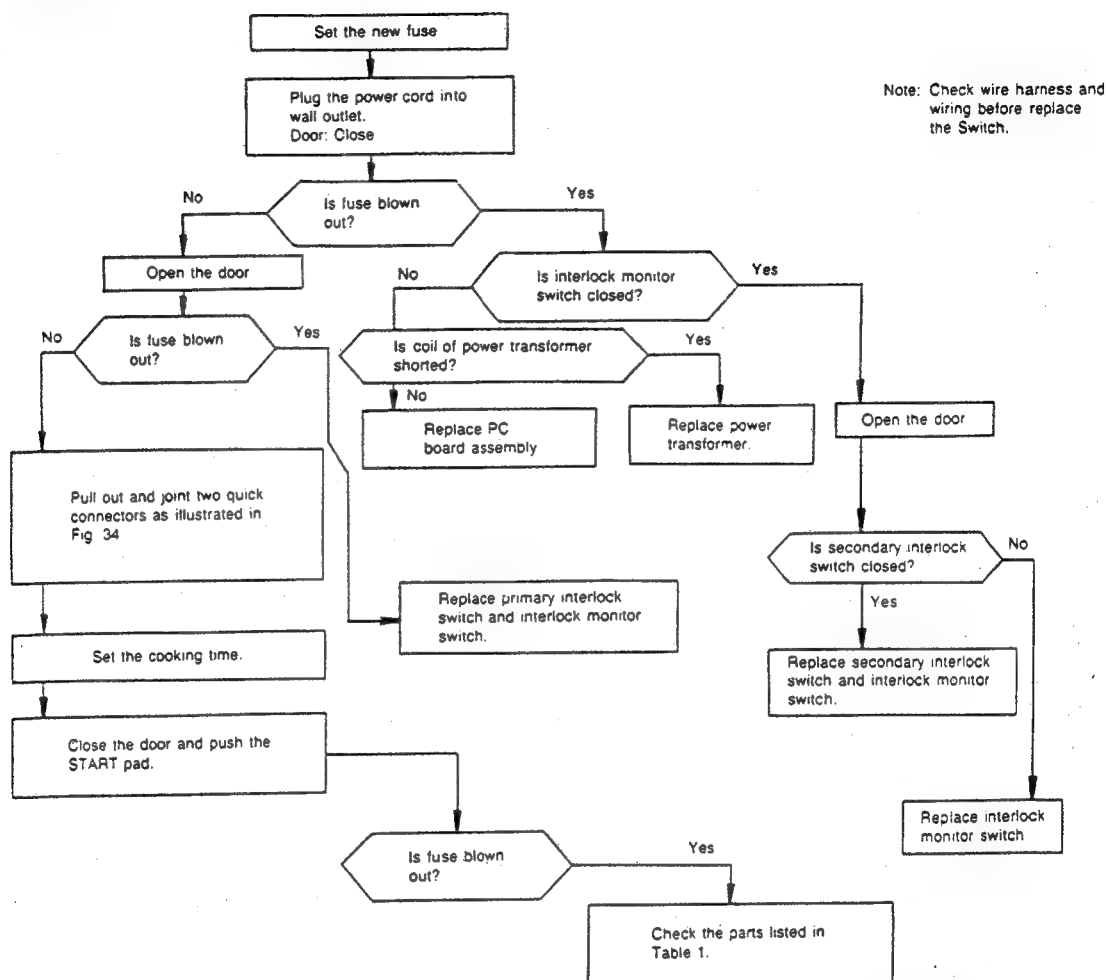
(Fig. 33)



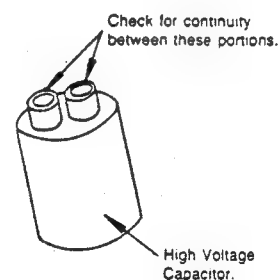
(Fig. 34)

# Troubleshooting Guide of M.W.Oven

## 2. Fuse is blown out



(Fig. 35)



(Fig. 36)

Table 1

Parts	Cause	Diagnosis	Remedy
H.V. Transformer	Layer short of the secondary winding.	The fuse does not blow right away, but it blows in a few seconds, then there is a layer short.	Replace H.V. Transformer
H.V. Capacitor	Port insulation between capacitor terminals.	Check for the continuity between capacitor terminals. If there is continuity, capacitor is defective. (See Fig. 36)	Replace H.V. Capacitor

Note: When electric parts are checked or replaced, be sure the power cord is not inserted to the wall outlet.

## )

1

4. **Magnetron does not operate (Food can't be heated)**





# Troubleshooting Guide of M.W.Oven

Table 2

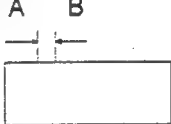
Parts	Cause	Diagnosis	Remedy
Magnetron	1) Open magnetron heater	Check continuity of magnetron heater with wires end stripped by using multimeter. If there is no continuity, magnetron heater is open.	Replace the magnetron.
	2) Shorted Magnetron	Connect megger leads to magnetron terminals and magnetron body. If there is continuity, magnetron is defective. (In this event, main fuse will be blown.)	Replace the magnetron.
Rectifier	Defective rectifier	Check continuity of rectifier in forward and backward direction with DC megger. If there is continuity in backward direction, rectifier is defective. (In this case, high-voltage capacitor will become hot.)	Replace the rectifier.
H.V. transformer	Open coil of H.V. Transformer	Check primary coil and secondary coil for continuity. If there is no continuity, transformer is defective.	Replace the H.V. transformer.
H.V. capacitor	Shorted H.V. capacitor	Check continuity of capacitor terminals with wires end stripped. If there is continuity, capacitor is defective. If capacitor shorts, fuse is blown out.	Replace the H.V. capacitor.

Table 3

Parts	Cause	Diagnosis	Remedy
Secondary interlock switch	Poor contact of secondary interlock switch	Check the terminals for electrical continuity with end-stripped wires by using multimeter, according to Electrical continuity check of interlock switch on page 27.	Replace or adjust.
Primary interlock switch	Poor contact of primary interlock switch		
Convection Cooking No Works	Convection thermal cutout switch in casing ass'y	Check if there is no continuity between two terminals without receptacles.	Replace.
	Convection Heater	Check if the coil is open or shorted on metal parts.	Replace.
	Oven thermistor	When indicator blinks with three beeps after start, Check connection of wire lead or check that thermistor resistance is approx. $291K\Omega \pm 12\%$ at $25^{\circ}\text{C}$ .	Connect securely or replace.
Grill heater No Works	Grill Thermal Cutout Switch	Check if there is no continuity between two terminals without wire lead.	Replace.
	Grill Heater	Measure the resistance of heater with multimeter to see if coil is open or shorted to any metal parts.	Replace.

# Troubleshooting Guide of M.W.Oven

Table 4

Parts	Cause	Diagnosis	Remedy
Oven lamp does not illuminate, when door is open.	1) Fuse blown out	Check fuse in fuse holder.	Replace fuse and check the parts as directed on page 29 "2 Fuse is blown out".
	2) Poor contact of power cord	Check power cord for continuity. Also check power leads are securely wired.	Adjust or replace power cord.
	3) Lamp blown out	Check lamp.	Replace lamp.
	4) Oven and or magnetron thermostat open	Lamp does not illuminate, even after replacing lamp when door is open. Check continuity for terminals for thermostat with end-stripped wires by using multimeter. If there is no continuity between terminals, thermostat is defective.	Replace thermostat.
	5) Defective cook relay	If the terminals A and B of cook relay are electrically not continued when the door is opened, the relay is defective. 	Replace.
	6) Defective door opening monitor switch	If the door monitor switch is ON condition when door is open, switch is defect.	Replace or adjust.
Blower motor or cooking tray does not rotate.	1) Defective blower motor	If motor does not operate with 220V applied to motor terminals, motor may be faulty.	Replace motor.
	2) Defective drive motor	Check to see if 220V exists at motor terminals. If so, motor will be defective.	Replace drive motor
	3) Poor drive of the roller or turning shaft	Check to see if dust lays on roller or turning shaft.	Clean roller or turning shaft.
Sparkling (or arcing in cavity)	1) Carbonized dust in oven	Check if dust lays on spatter shield or on its support.	Clean oven cavity.
Microwave during cooking cycle.	1) Too small load of food	If small amount of food is heated for a long time, microwave is turned off during operation.	To increase load, place a glass of water in the oven with food.
	2) Defective magnetron thermostat	Check thermostat terminals for continuity with end stripped wires by using multimeter. If there is no continuity, thermostat is defective.	Replace thermostat.

# Troubleshooting Guide of Touch Control Circuit

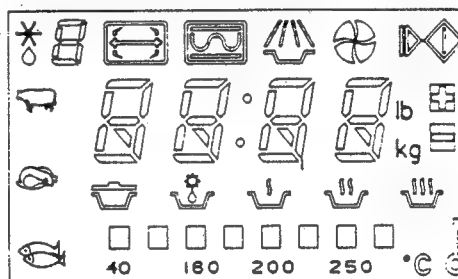
Follow the procedures below to check if the touch control circuit is defective.

1. Check grounding before checking for trouble.
2. Be careful of the high voltage circuit.
3. Discharge the high voltage capacitor(see page 6).
4. When checking the continuity of the switches or transformer, disconnect one lead wire from these parts and then check continuity without turning the power source on. To do otherwise may result in a false reading or a damage to your meter.
5. Do not touch any part of the circuit or the touch control circuit board, since static electric discharge may damage this control panel. Always touch ground while working on this panel to discharge any static charge built up in your body.

First of all operate the microwave oven by observing the correct operating procedures by time cooking in order to find the exact cause of any trouble.

[TROUBLE 1] The following visual conditions indicate a probable defective touch control circuit.

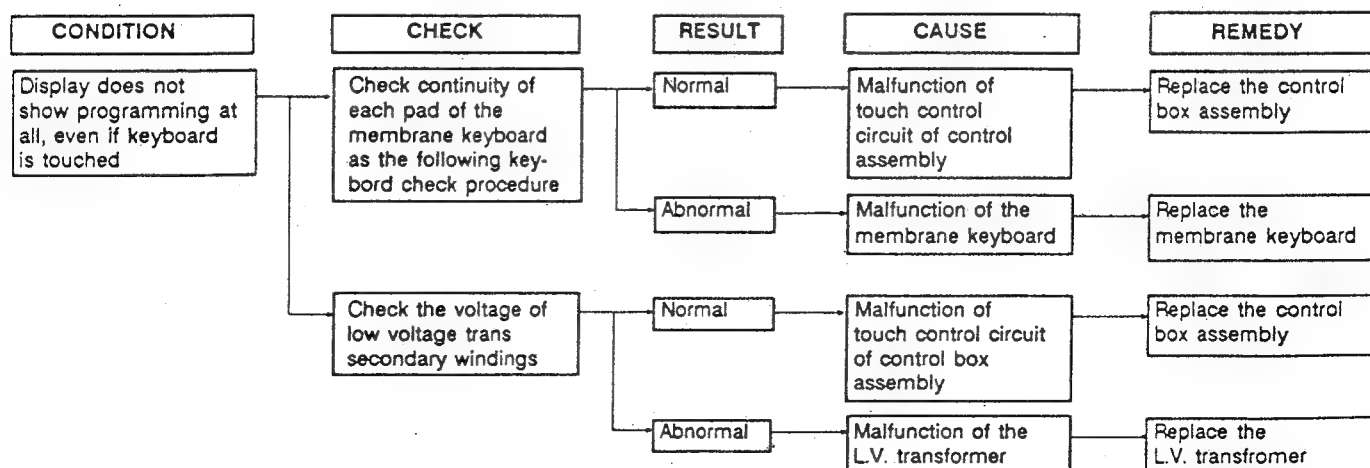
1. Complete segments
  - (A) Incomplete segments
  - (B) Partial segments missing
  - (C) Digit flickering  
(Other than normal fluorescent light flickering.)
  - (D) Colon does not turn on.
2. A distinct change in the brightness of one or more numbers in the display.
3. One or more digits in the display does not light when they should.
4. No indicator lights for the selected cooking function.
5. Display indicates a number different from one touched.
6. Specific pads (for example, 2 or 3) will not display when the panel is touched.
7. Display does not count down or clock does not operate.
8. Display obviously skips in time while counting down.
9. Display counts down noticeably too fast while cooking.
10. Display can not shift from first stage cooking to the second stage cooking while 2 phase cooking.



(Fig. 37)

11. Display continues counting down during time cooking when door-open button is pressed. Check if door sensing switch shorts when door open button is pressed. If the door sensing switch is normal, replace touch control circuit.
12. The time of day in the display does not reappear when the CANCEL pad is touched twice.
13. The oven lamp and fan motor do not stop although cooking is finished, Replace the touch control circuit.

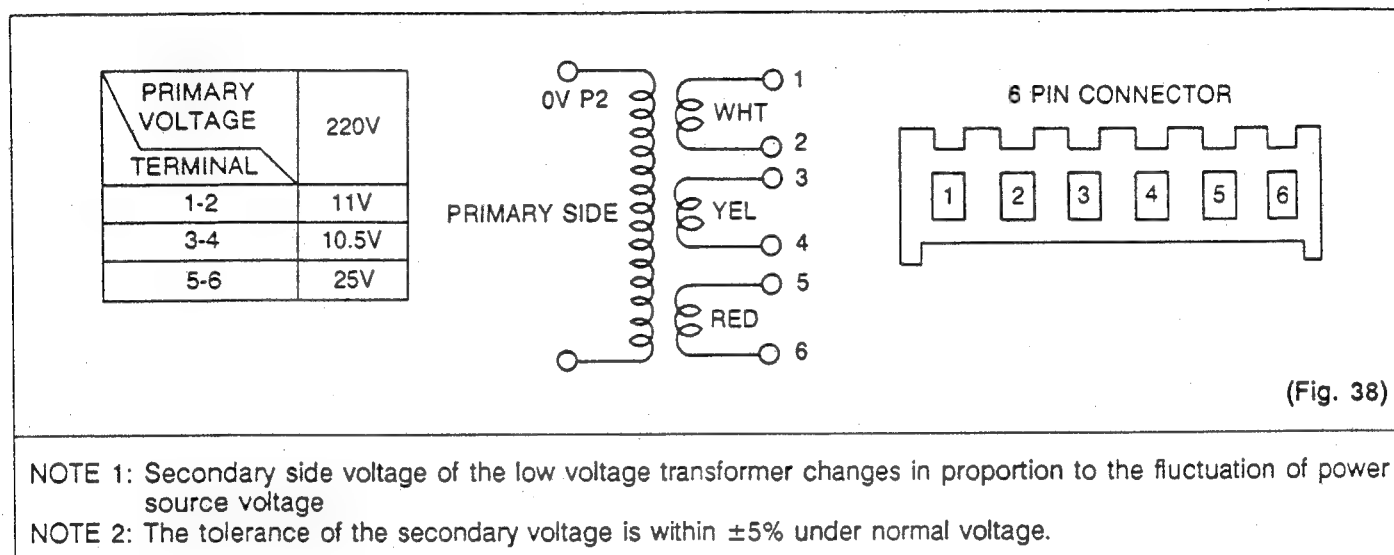
[TROUBLE 2] Digital Readout Display does not show programming, even if the membrane key board is programmed by touching proper pads.



NOTE 1: Before following the particular step above for the membrane key board's failure, please check of the continuity for each wire harness between the membrane keyboard and touch control circuit.

# Troubleshooting Guide of Touch Control Circuit

[TROUBLE 3] Microwave oven does not operate properly with time cooking.



(TROUBLE A) Microwave oven does not operate at all although the start pad is touched. In this case, the oven lamp may go on but not to full brightness and the fan motor may rotate slowly. Also the gear motor may rotate slowly. And the touch control circuit may not detect the key input signal.

- (1) Check the primary and secondary voltage of the low voltage transformer. The normal voltage of the L.V. transformer with no load should read as shown in Fig. 38.

\* When the voltage is out of the range, replace the low voltage transformer.

- (2) Check the continuity of the door sensing switch. The continuity of door sensing switch should be checked with one side of the switch open and the power supply cord unplugged. The contacts of door sensing switch should open when the door is opened.

(TROUBLE B) Oven lamp and fan motor operate normally but microwave does not oscillate or cooking time takes too long when compared to the cooking time described in the cookbook.

- (1) Operate the microwave oven with a water load in the oven and power level at high selection for a few minutes. Then measure the continuity between the terminal of Power Control Relay with the oven started.
- (2) If the symptom is that the microwave oven operates normally only at high power setting, but does not operate properly at other power settings, measure the timing periods of the line voltage applied to the two terminals of the power control relay. The timing periods

of the line voltage being applied at each power setting should read as listed in the Fig 39. When the timing period of the power control relay is other than those listed, replace the touch control circuit or power relay. Be very cautious of the high voltage.

POWER LEVEL (%)	RELAY TURN ON TIME(sec)	RELAY TURN OFF TIME (sec)
10	4	26
30	10	20
50	16	14
70	22	8
100	30	0

(Fig. 39) Timing Periods of Power Control Relay

### 1. Power supply circuits.

The functions of these circuits are as follows:

(A) To convert AC voltage to DC potentials.

(B) To regulate the DC potentials suitable for use with other circuits.



NOTE 1. Normal voltages are shown.

2. Each symbol is same as printed on PCB.

3. RD1-RD5: Diode IN4001

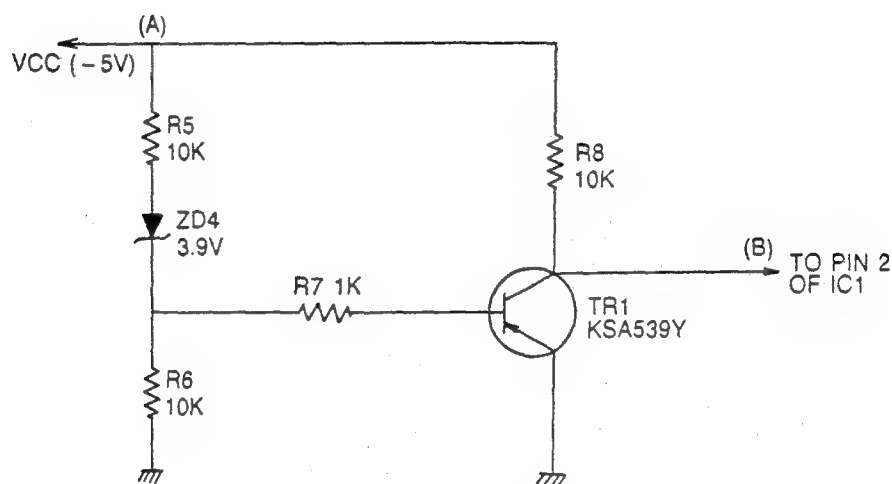
# Touch Control Circuit Descriptions

## 2. Power Initializing Circuit (Reset)

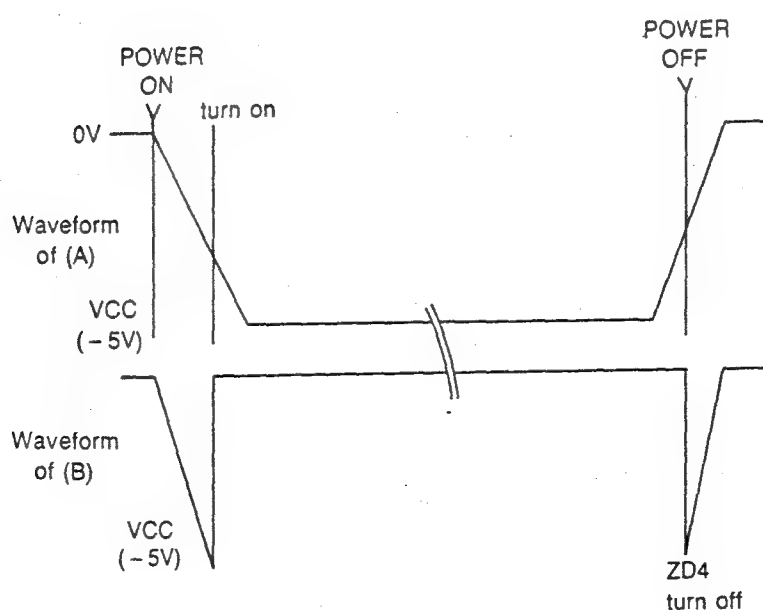
Initializes the microcomputers 73C81 (IC1) automatically.

Figure 41 shows the schematic configuration

Figure 42 shows the voltage waveforms upon applying power.



(Fig. 41) Power Initializing Circuit (Power Up Reset Delay Circuit)



(Fig. 42) Voltage Waveform upon Applying Power

# Touch Control Circuit Descriptions

## 3. Timer Pulse Shaping Circuit

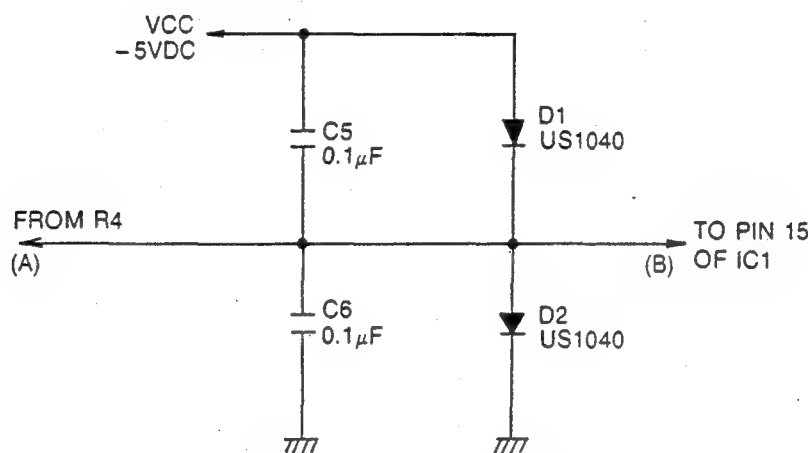
Converts sinuous waveform of 50Hz into shaped waveform.

This pulse becomes the time base of timer in the microcomputers.

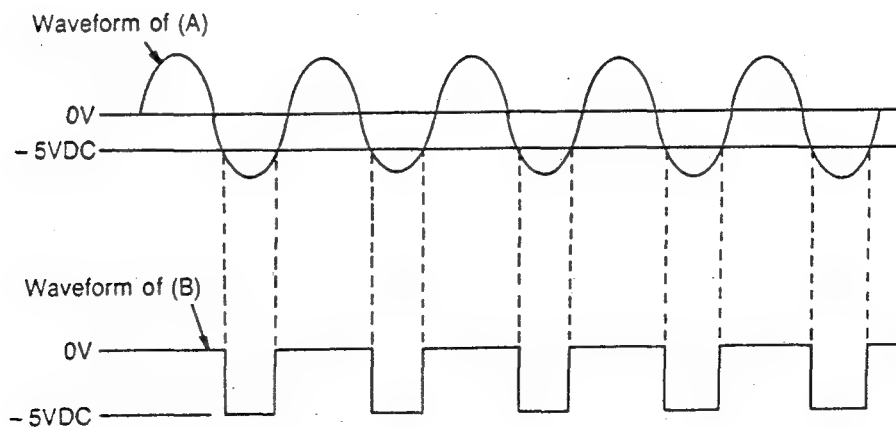
73C81 (IC1) and supplies zero-crossing point signal for power control relay triggering.

Figure 43 shows the schematic configuration.

Figure 44 shows the waveform of the each section in Figure 43.



(Fig. 43) Pulse Shaping Circuit



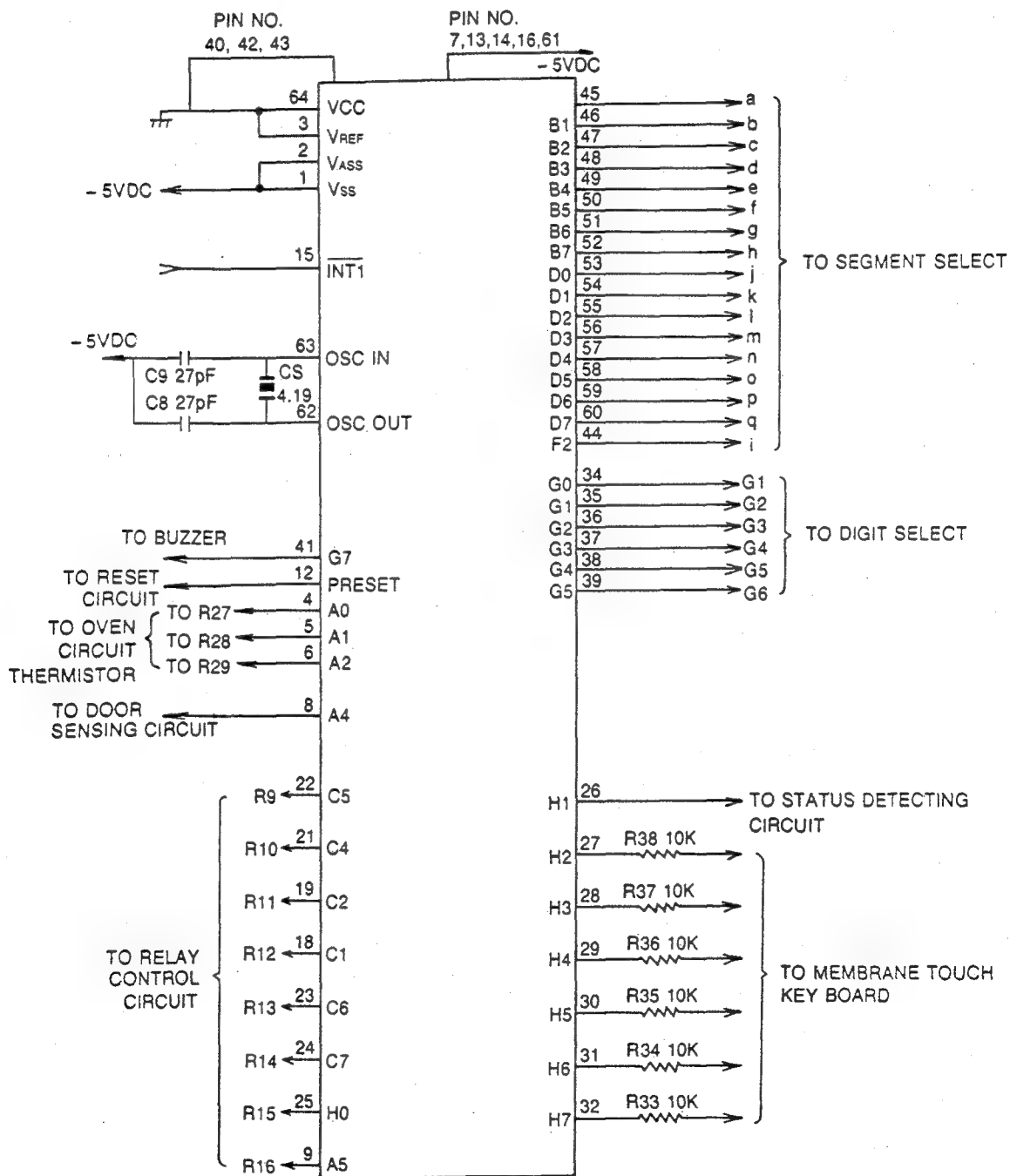
(Fig. 44) Waveform of Each Section in Figure 43.

# Touch Control Circuit Descriptions

## 4. Microcomputer (73C81) Circuit.

The functions of this circuit are:

- (A) To receive the information from other circuits.
- (B) To store the information.
- (C) To process the information according to the predetermined sequence.
- (D) To send signals to the other circuits.



(Fig. 45) Microcomputer Circuit

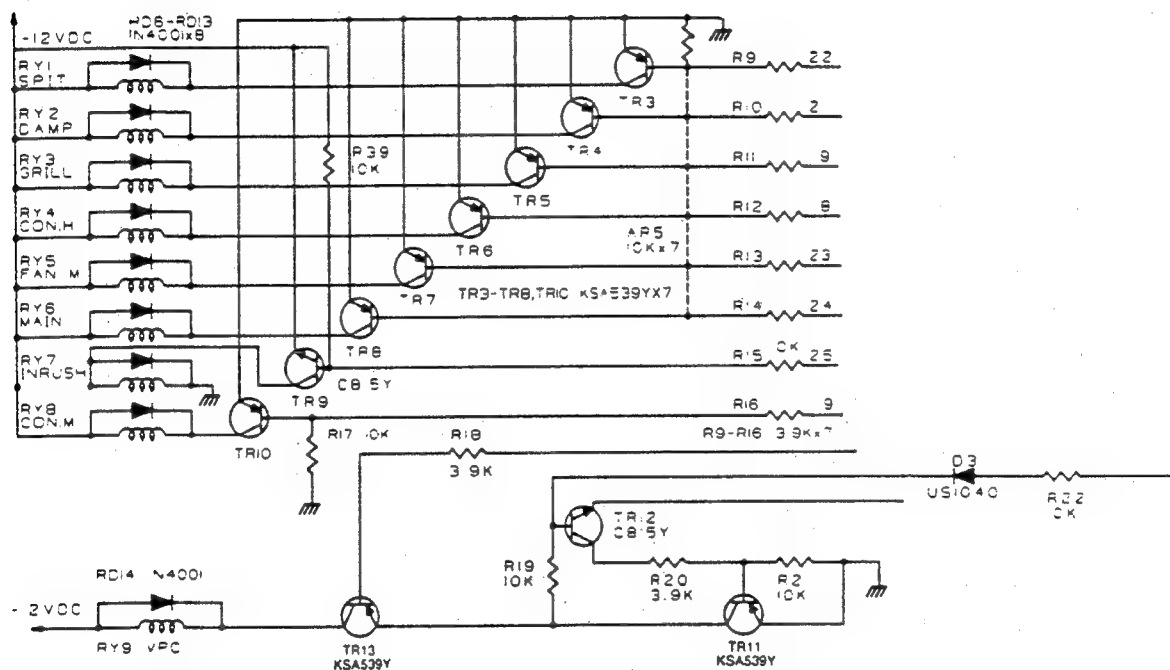


# Touch Control Circuit Descriptions

## 5. Relay Control Circuit

This circuit drives many relays according to cooking sequence.

Figure 46 shows the schematic diagram of the relay control circuit.

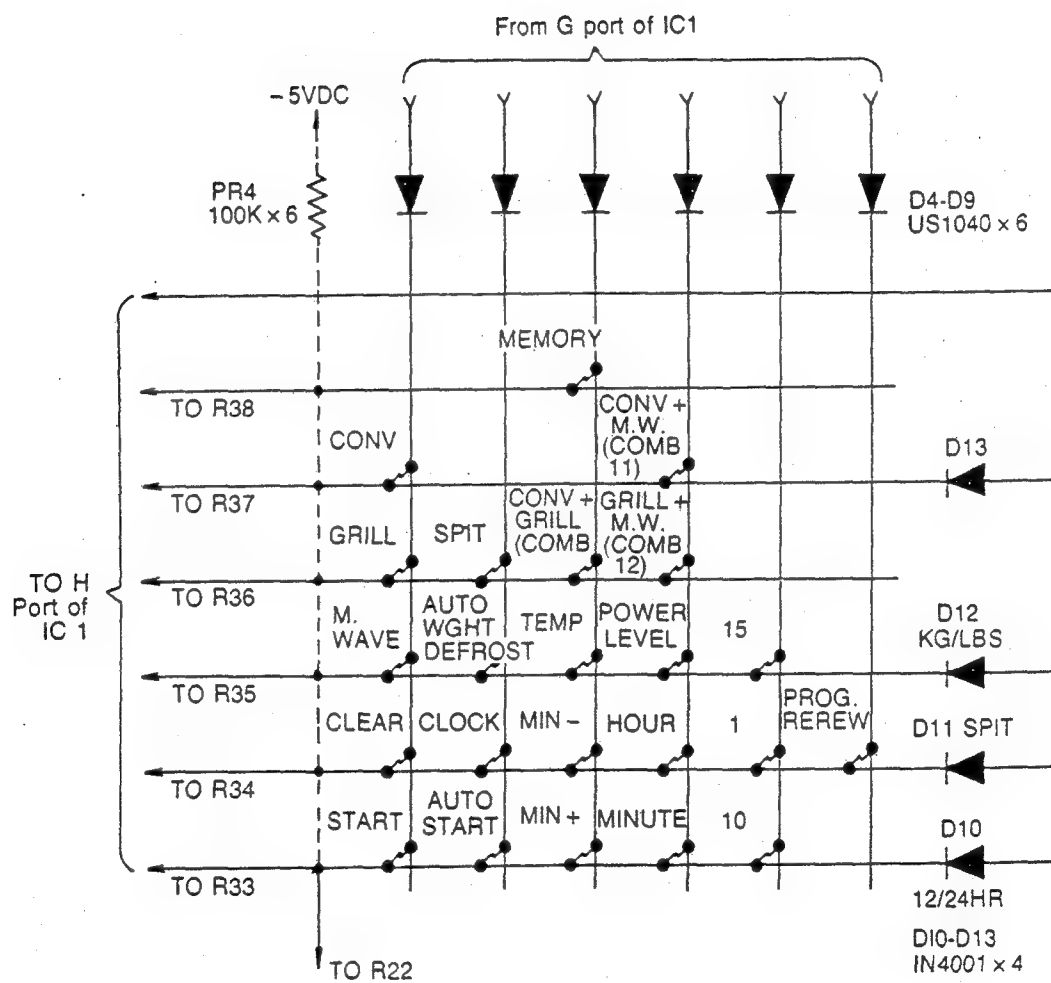


(Fig. 46) Relay Control Circuit

# Touch Control Circuit Descriptions

## 6. Function Select Pad Matrix

This circuit 22 keys and its basic circuit are shown in Figure 47.



(Fig. 47) Function Select Pad Key Matrix

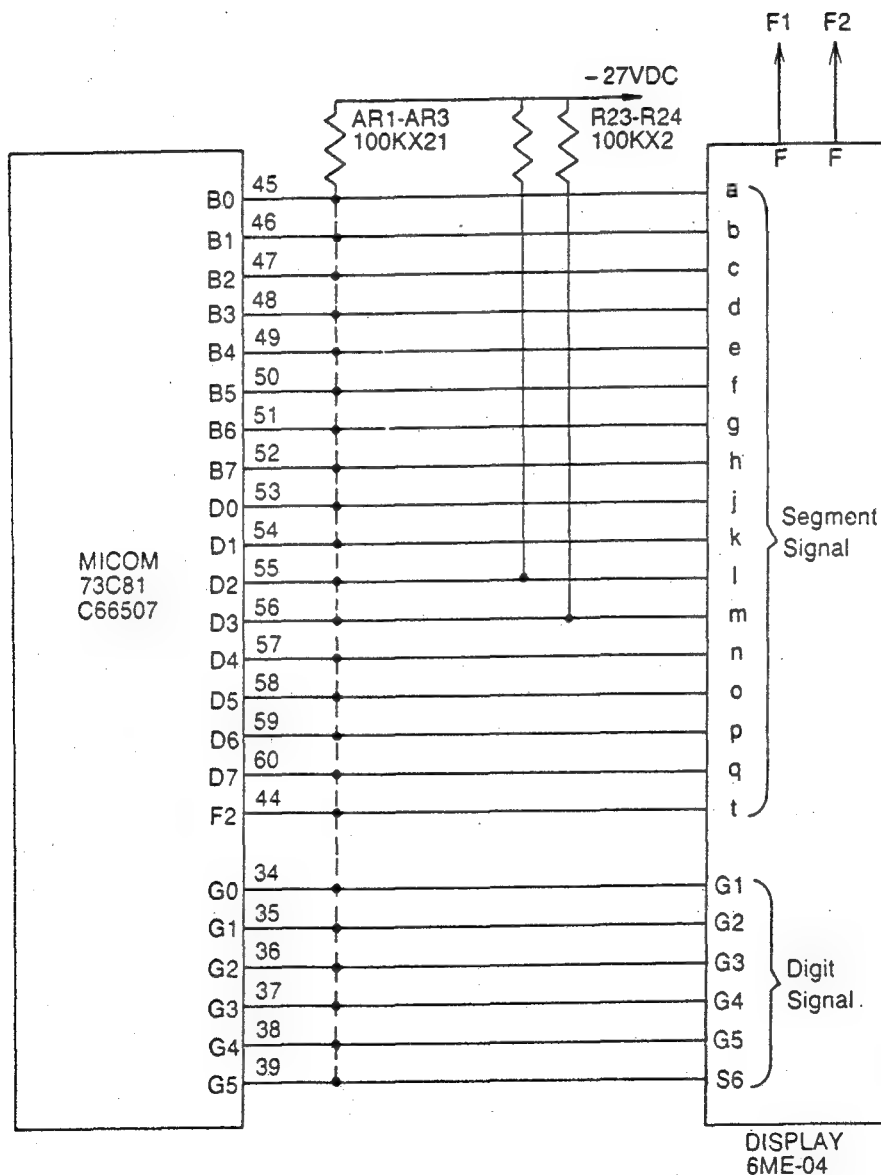
# Touch Control Circuit Descriptions

## 7. Display Circuit

Figure 48 shows the schematic configuration of display circuit.

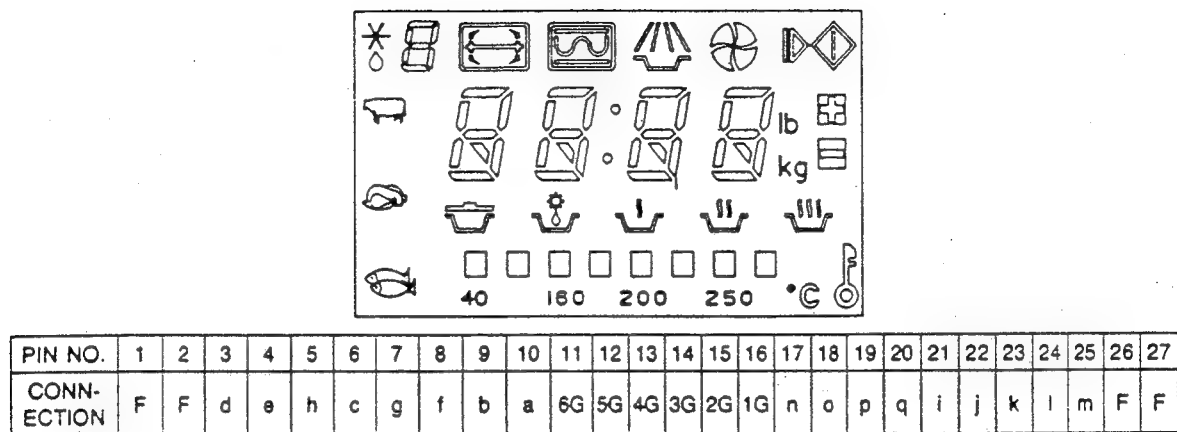
Figure 49 shows the pin assignment of 6ME-04 display.

Figure 50 shows the inner circuit of 6ME-04 display.



(Fig. 48) Display Circuit

# Touch Control Circuit Descriptions



(Fig. 49) Pin Assignment of 6ME-04

## PATTERN CONNECTION

	6G	5G	4G	3G	2G	1G
a	a	a	a	a	a	
b	b	b	b	b	b	—
c	c	c	c	c	c	—
d	d	d	d	d	d	—
e	e	e	e	e	e	
f	f	f	f	f	f	
g	g	g	g	g	g	lb
h		h	h	h	h	kg
i		—			—	—
j						
k						—
l	—					
m	—	40	180	200	250	°C
n	—					—
o	—					—
p	—					—
q	—					—

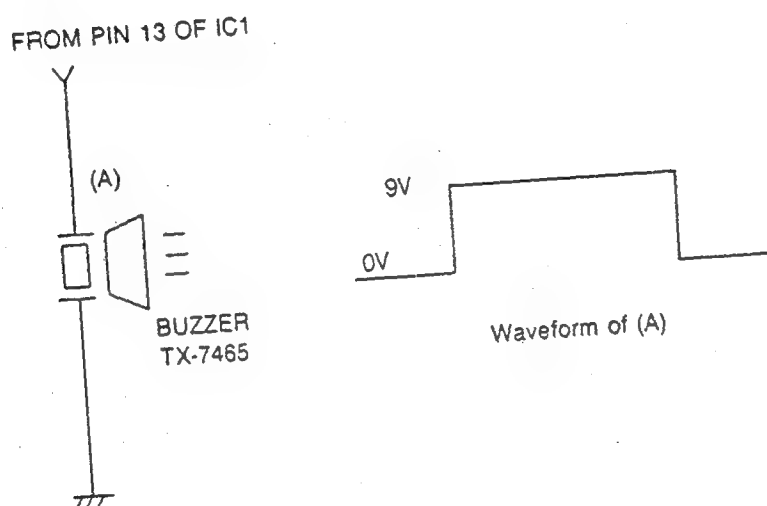
(Fig. 50) 6ME-04 Pattern Connection

# Touch Control Circuit Descriptions

## 8. Buzzer Circuit

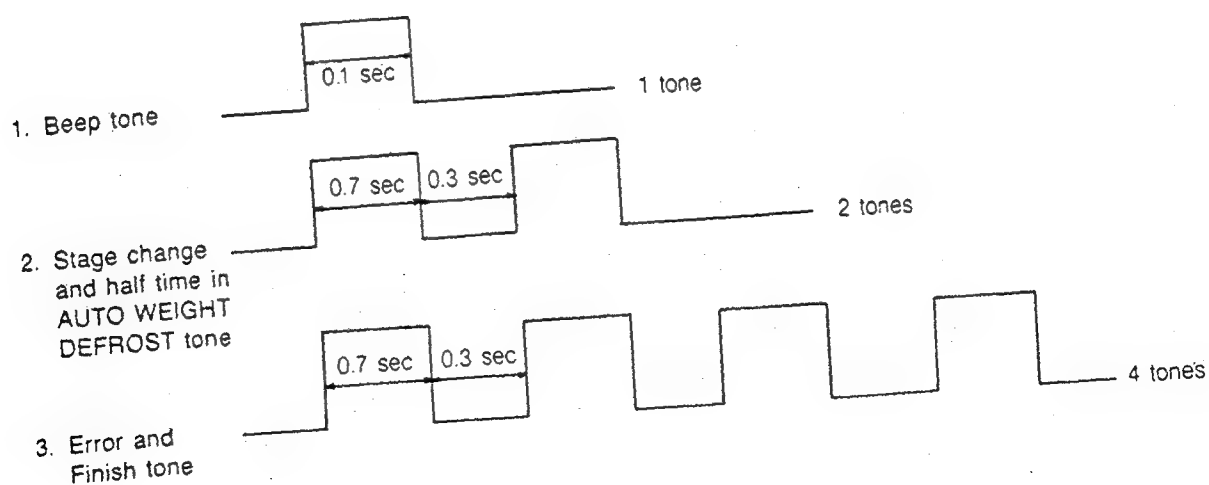
Buzzer beeps when cooking cycle is completed or when the pad input is recognized by the microcomputer 73C81 (IC1).

Figure 51 shows the schematic configuration of buzzer circuit.



(Fig. 51) Driving Circuit of Buzzer and Waveform

NOTE: Buzzer tone classification



(Fig. 52) Waveform of Each Buzzer Tone

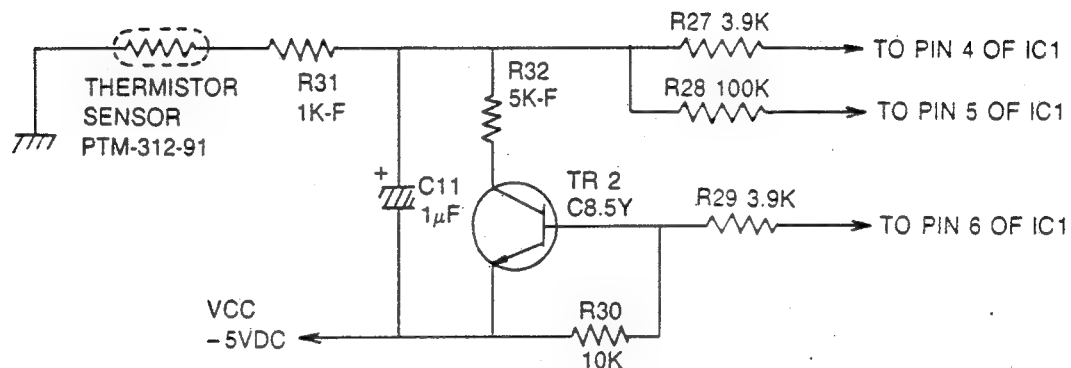
# Touch Control Circuit Descriptions

## 9. Sensor Control Circuit

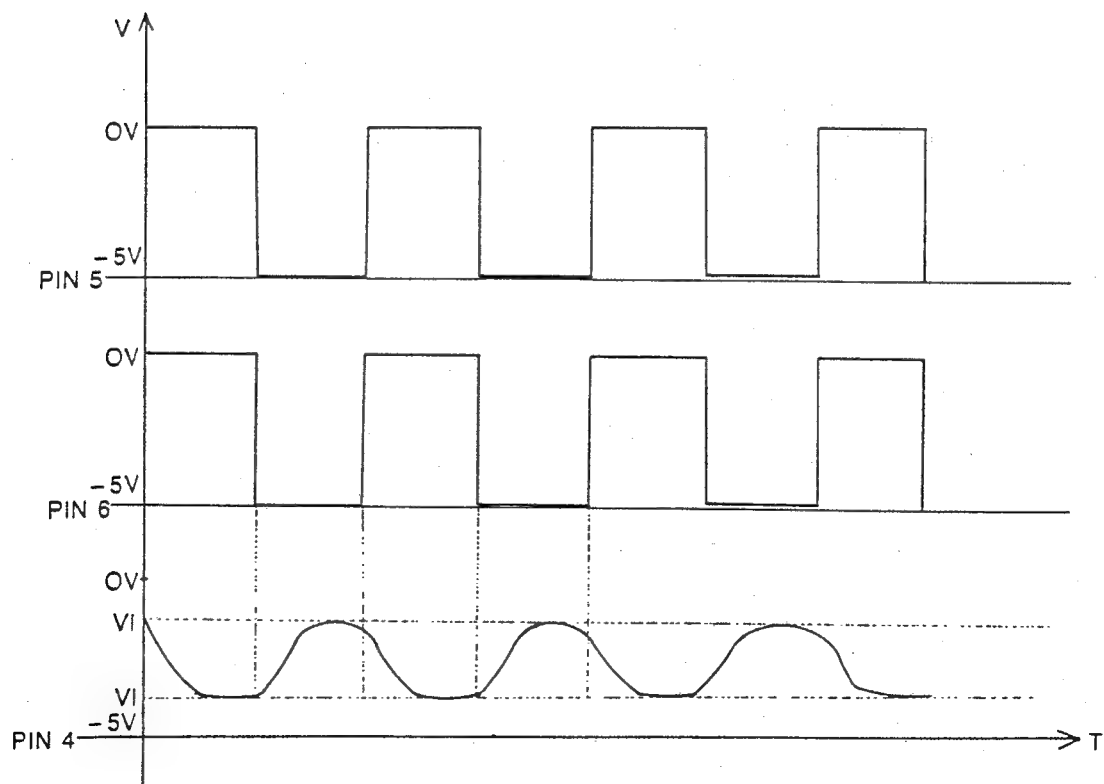
Convert the resistance variation of thermistor to the voltage variation.

Figure 53 shows the schematic configuration of temperature circuit.

Figure 54 shows the voltage waveform of Pin 4.



(Fig. 53) Sensor Control Circuit



(Fig. 54) Waveform of Each Pin

# Touch Control Circuit Descriptions

## 10. Status Detecting Circuit

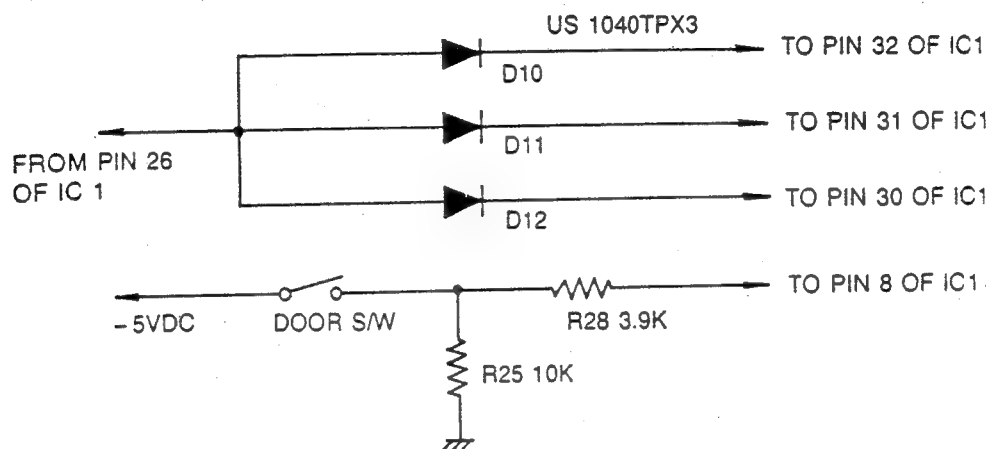
Detects the following and sends the information to microcomputer.

(A) Whether the door is open or closed.

(B) Whether the rotating spit is used or not.

(C) Whether the timer pulse frequency for time base is 12/24 HR and Kg/Lbs or not.

Figure 55 shows the schematic configuration of the status detecting circuit.

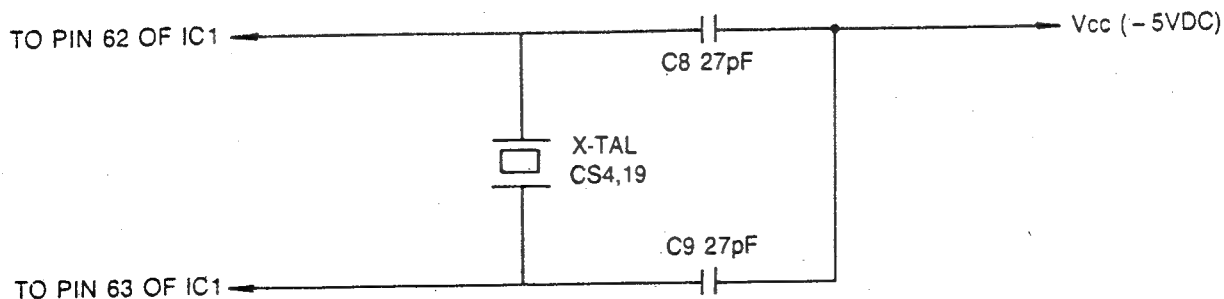


Symbols On	Status	ON	OFF
D10	12/24 Hour	12 Hour time pulse	24 Hour time pulse
D11	Spt	Spit is used	Spit is not used
D12	Kg/Lbs	Lbs time pulse	Kg time pulse
Door Switch	Door S/W	Door closed	Door open

(Fig. 55) Status Detecting Circuit

## 11. Pulse Oscillator Circuit

This circuit generates an oscillating frequency that controls the steps of various input and output signals and times the data processing speed.



(Fig. 56) Pulse Oscillator Circuit

# Touch Control Circuit Description

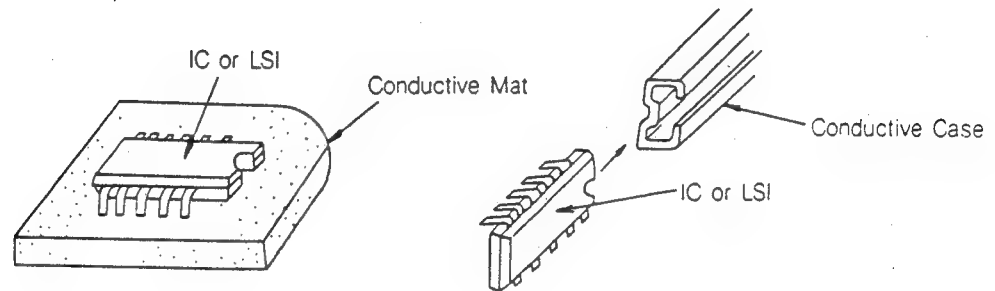
## 12. SERVICING

### (A) Service Precautions

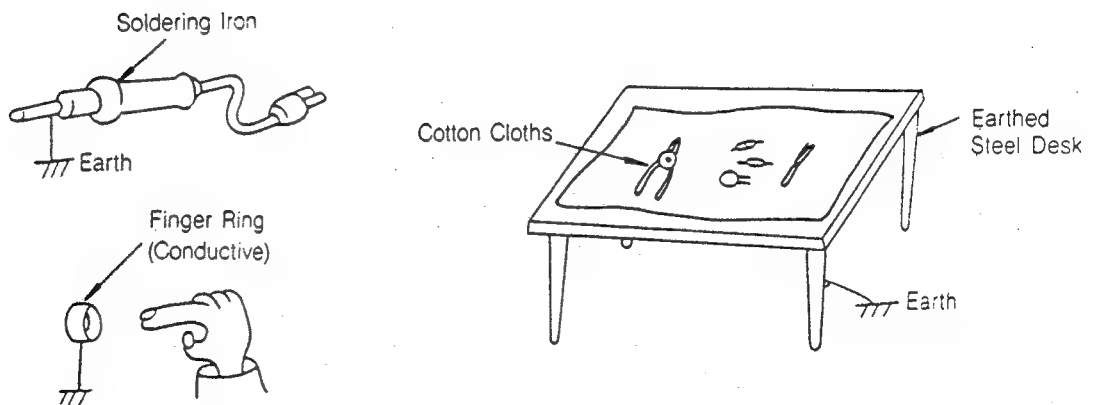
IC and LSI are subject to damage from static electricity.

Service with the following precautions.

- Stock IC and LSI in conductive mats or cases.
- Handle the parts after earthing a working bench, human body, tools etc.
- Recommended working mat: Cotton clothes
- Recommended working bench: Earthed steel desk (See Below)



(Fig. 57) Methods of Stocking IC or LSI



(Fig. 58) Method of Earthing for Servicing Desk



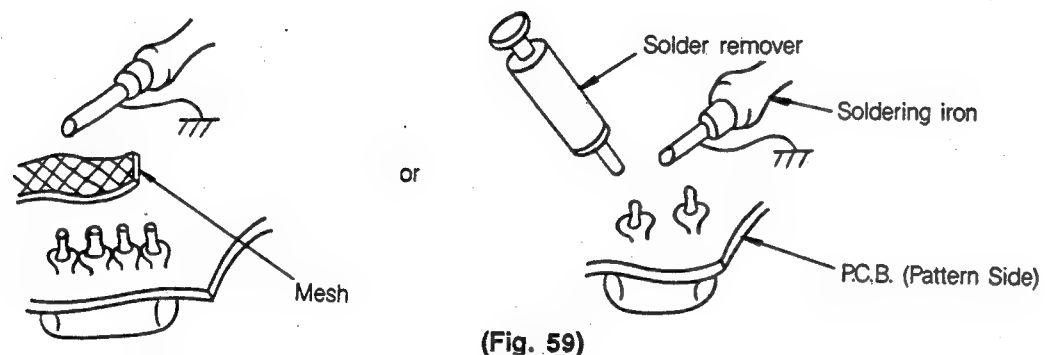
# Touch Control Circuit Descriptions

## (B) Desoldering and Soldering of Parts

- Tools: a. Soldering iron (30 watts earthed)  
b. Desoldering mesh or solder remover  
c. Tweezers  
d. Solder with inner flux  
e. Wire cutting tool

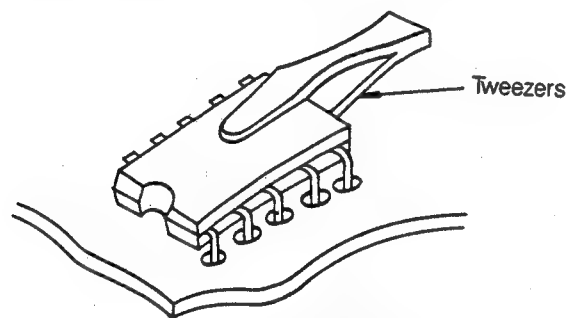
### Procedure:

- (a) Desolder all pins of defective part by using the desoldering mesh.



(Fig. 59)

- (b) Remove the desoldered parts from P.C.B by using Tweezers.



(Fig. 60)

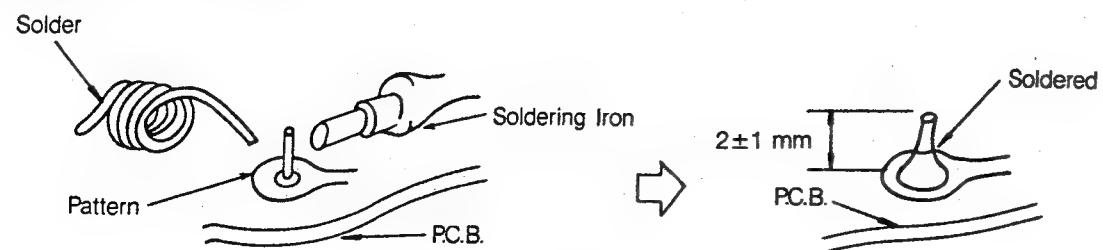
- (c) Place with a new part into P.C.B

**CAUTION:** Before inserting a new part check the polarity of capacitor and diode and pin number of IC or LSI.

- (d) Warm the pins of parts and pattern on P.C.B by using the soldering iron.

**CAUTION:** It's maximum warming time is 1 second.

- (e) Solder within 5 seconds.



(Fig. 61)

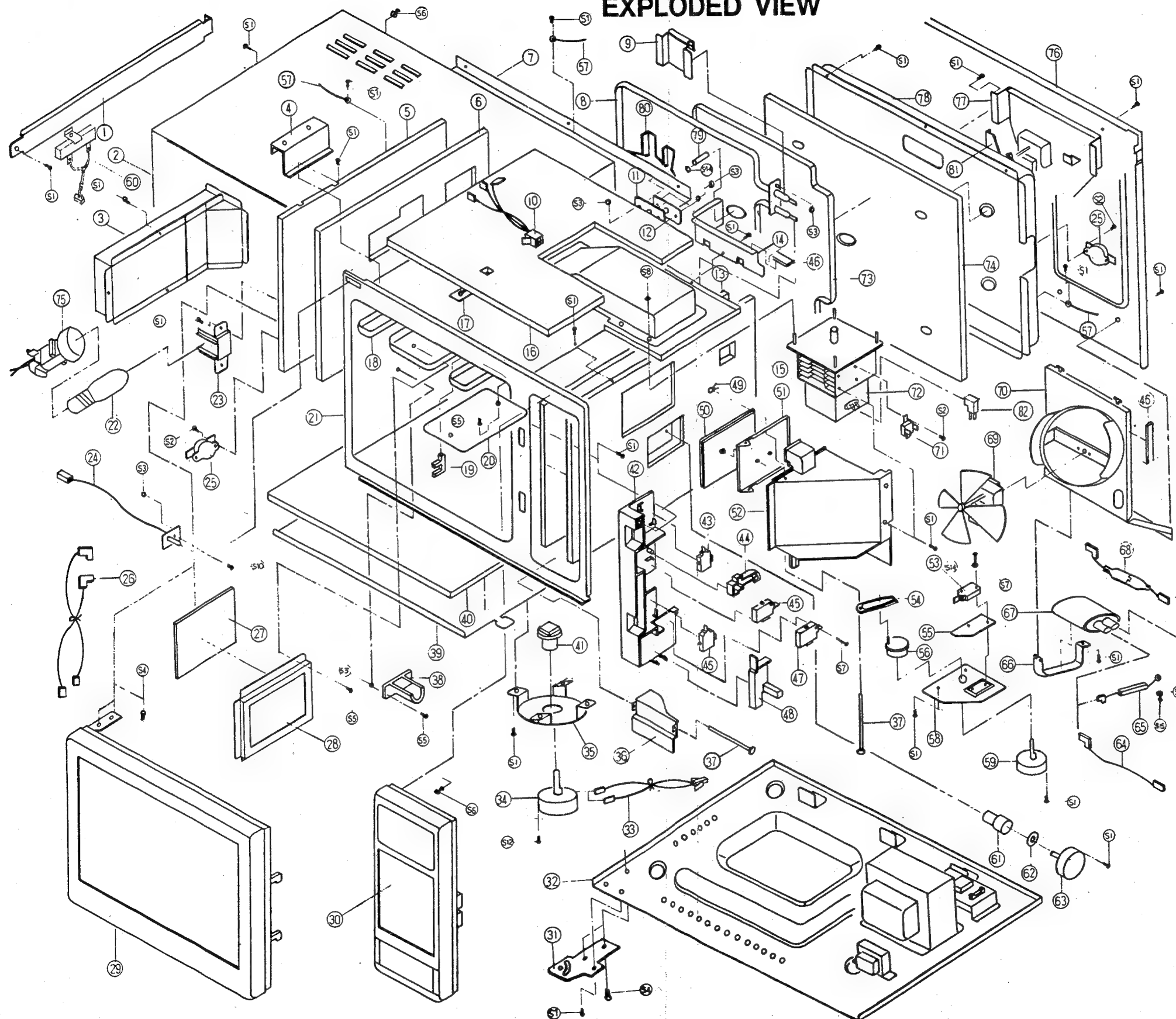
- (f) Cut the wire lead as shown in above figure.

**CAUTION:** Check the soldered portion. If the soldering is poor or solder-bridged, solder again.

# Exploded View - Cavity Parts

CAVITY PARTS

EXPLODED VIEW



# Parts List - Cavity Parts

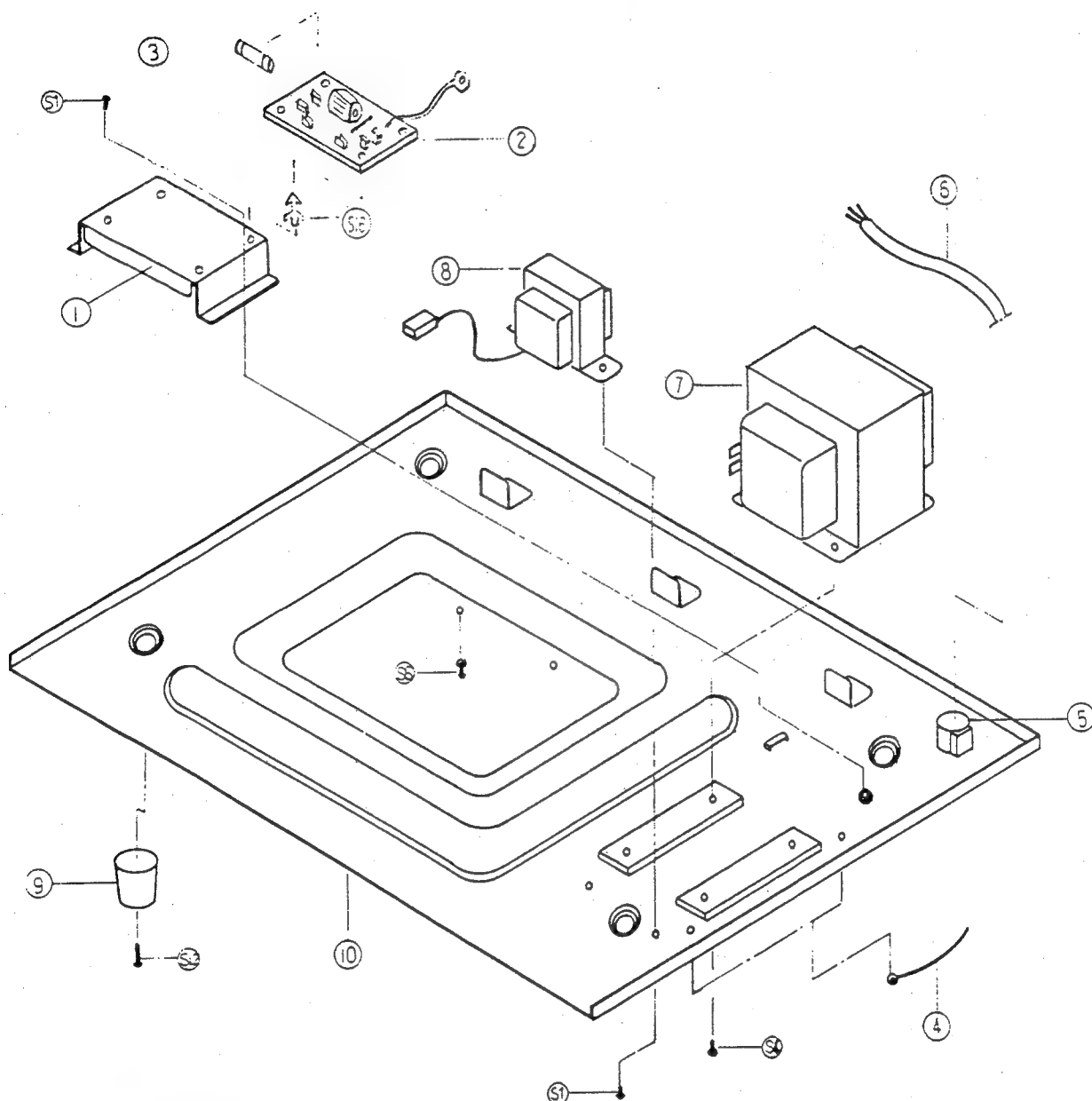
No.	Description	Parts No.	Specitation	Q'ty	Remark
1	SUPPORT-MGT	76613-234-710	EGI T0.8	1	S.N.A
2	OUT-PANEL	76401-228-310	ELLIO SHEET T0.7	1	
3	ASS'Y-GUIDE AIR	79292-213-610	RE-909CG	1	
4	BKT-HINGE UPPER	76614-277-010	SBHG1-A T1.2	1	
5	COVER-ADIABATIC "L"	76052-216-410	SBHG1-M T0.5	1	
6	ADIABATIC "L"	73963-231-910	GLASS WOOL T15	1	
7	SUPPORT-BACK	76613-234-910	EGI T0.6	1	
8	CONVECTION-HEATER	73712-208-020	220V 1400W	1	
9	HEATER-GUIDE	76614-283-210	EGI T1.0	1	
10	WIRE-HARNESS "B"	79193-231-010	RE-1200(TUV)	1	
11	HEATER GASKET	76464-223-410	BRASS WIRE	1	
12	BKT-GASKET	76614-281-510	EGI T2.0	1	
13	ADIABATIC "R"	73963-231-710	GLASS WOOL T15	1	
14	COVER-AIR "B"	76613-240-910	SBHG1-A T0.6	1	
15	COVER-ADIABATIC "R"	76052-216-310	SBHG1-M T0.5	1	
16	ADIABATIC "U"	73963-232-610	FIBER GLASS T10	1	
17	PLATE-SPRING	76674-232-810	SK-5 T0.5	1	
18	GRILL-HEATER	73712-207-920	220V 1300W	1	
19	SUPPORT HEATER	76654-226-210	ALUMINA N92	1	
20	CEILING PLATE	76474-204-210	MICA-SHEET T0.5	1	
21	ASSY-CAVITY	79291-219-630	COATING	1	
22	LAMP	72059-301-039	220V/20W E/14	1	
23	BKT-LAMP	76613-236-510	SBHG1-A T0.8	1	
24	THERMISTOR	72189-606-013	PT-312-K2	1	
25	THERMO SWITCH	73589-001-039	PW-2N (BKT: 23.8)	2	
26	WIRE-HARNESS "A"	79192-262-810	RE-1200(TUV)	1	
27	GLASS PLATE	76144-201-910	TEMPERRED GLASS	1	
28	LAMP COVER "F"	76154-209-010	STS304 T0.4	1	
29	ASSY-DOOR	79299-208-505	RE-1200(SAW)	1	
30	ASSY-CONTROL BOX	79199-206-859	RE-1200(SSW)	1	
31	HINGE LOWER	76664-233-510	SBC1 T3.0	1	
32	ASSY-BASE PLATE	79199-206-868	RE-1200(SSW)	1	
33	WIRE HARNESS "C"	79194-228-610	RE-909CG	1	
34	DRIVE-MOTOR	74769-221-606	MVLB51ZR11	1	
35	BKT-DRIVE MOTOR COVER	76613-236-310	EGI T0.8	1	
36	BKT-DOOR LEVER	76613-235-810	EGI T1.5	1	
37	PIN PLATE DAMPER	77364-241-910	MSWR3	2	
38	BARBECUE HOLDER	76464-223-610	TEFRON	1	
39	COVER-ADIABATIC "LOW"	76052-216-210	SBHG1-M T0.5	1	
40	ADIABATIC "LOW"	73963-231-810	GLASS WOOL T10	1	
41	COUPLER	75143-200-510	SILICONE KMC401	1	
42	BODY-LATCH	76462-212-610	NYLON #66	1	
43	MICRO S/W	73579-203-278	VP-531A-OF (T85)	1	
44	LEVER-SLIDER "A"	76464-221-810	NYLON #66	1	
45	S/W SENSITIVE	73579-203-277	VP-533A-OF T85	2	
46	CUSHION-AIR	76834-236-810	T4x10x270	2	
47	S/W SENSITIVE	73579-203-279	VP-333A-OD	1	
48	LEVER-SLIDER "B"	76463-216-810	NYLON #66	1	
49	PIN-WIRE	77364-210-210	MSWR3 PI1.0	1	
50	SILICONE-DAMPER	76463-218-210	SILICONE	1	

\* S.N.A: Service not available.

# Parts List - Cavity Parts

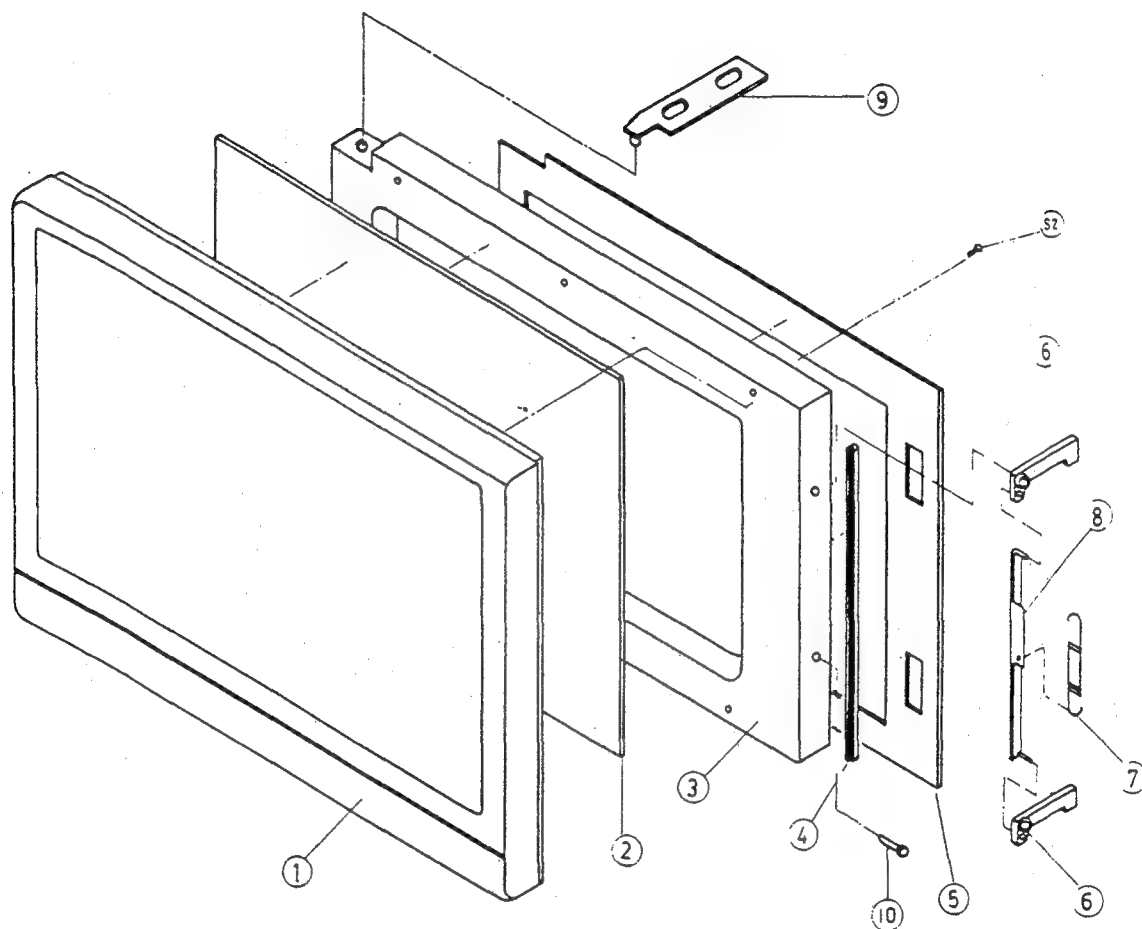
No.	Description	Parts No.	Specification	Q'ty	Remark
51	DAMPER-PLATE	76613-234-810	EGI T0.6	1	
52	DAMPER-COVER	75402-202-110	NYLON #66	1	
53	MICRO-SWITCH	73579-203-265	VP331A-0D(PT2)	1	
54	LEVER-DAMPER	75253-207-110	POM (DURACON)	1	
55	SHEET-INSK "K"	73934-209-910	POLYESTER T0.5	1	
56	CAM	75243-232-010	POM (DURACON)	1	
57	CORD-CLAMP	73939-218-003	DALC-2-1 (SILICONE)	3	
58	BKT-DAMPER MOTOR	76613-235-410	EGI T0.8	1	
59	DAMPER-MOTOR	74769-221-690	M2LB49ZR02	1	
60	ASSY-BKT RESISTOR	79099-202-038	FX175ZD	1	
61	BARBECUE COUPLER	76464-223-310	AL	1	
62	BARBECUE GASKET	76464-223-510	BRASS WIRE	1	
63	SPIT-MOTOR	74769-221-708	MULJ24JR03	1	
64	LEAD WIRE "B"	73053-207-040	2GB0 190MM	1	
65	H.V.DIODE	72169-219-108	HVR-1X-32B	1	
66	BKT-HVC	76614-259-310	SBHG1-A T0.6	1	
67	CAPACITOR H.V	71563-200-110	SCH-2121134B1	1	
68	ASSY H.V.FUSE	79199-205-515	5KV 0.7A	1	
69	FAN-MOTOR	74762-203-310	AMM90-004ATEB	1	
70	ASSY-COVER BLOWER	79292-214-210	RE-909CG	1	
71	THERMO S/W	73589-001-042	PW2N(160/60)	1	
72	MAGNETRON	72039-001-143	OM75S(10)-D	1	
73	HEATER-COVER "A"	76152-241-810	ALSTAR T0.6	1	
74	ADIABATIC-HEATER	73963-231-610	GLASS WOOL T10	1	
75	LAMP-SOCKET	76609-200-228	E/14 (22.225)	1	
76	BACK-PANEL	76401-229-510	ASP3 T0.6	1	
77	CONVECTION-MOTOR	74762-203-110	AMM90-004 ATEA	1	
78	HEATER-COVER "B"	76152-241-910	EGI T0.6	1	
79	BUSHING	77364-241-810	MSWR3	1	
80	BLADE-FAN	75703-202-010	ALSTAR T0.6	1	
81	COOLING-FAN	75703-201-810	EGI T0.6	1	
82	MC CHOKE COIL	79199-204-248	TC101	1	

## Exploded View & Parts List - Base Plate Parts



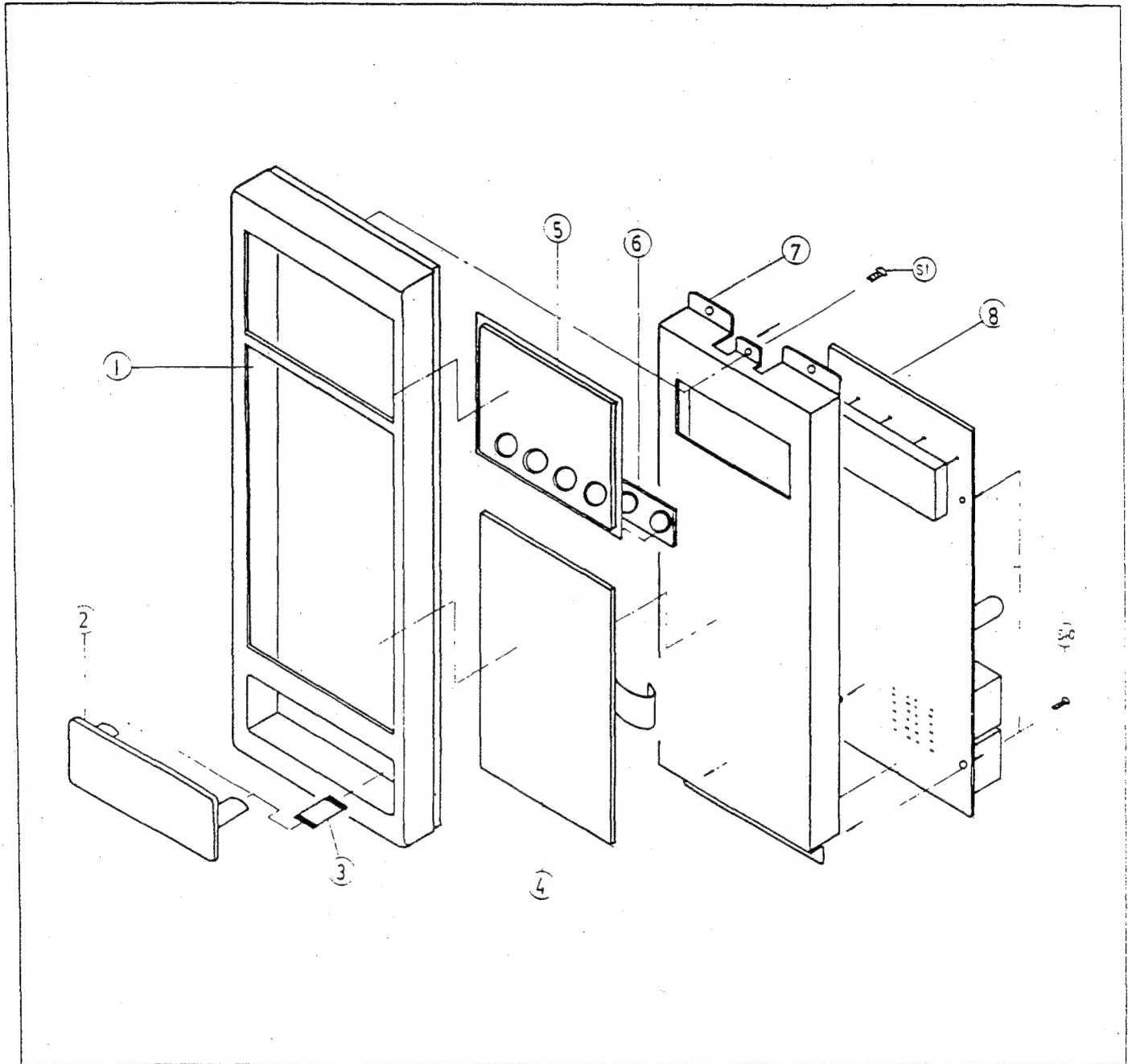
No.	Description	Parts No.	Specification	Q'ty	Remark
1	BKT-CORD	76613-236-410	EGI T0.8	1	
2	ASSY NOISE FILTER	79193-231-120	RE-1200(SSW)	1	
3	FUSE MAIN	74709-102-206	MDA-15	1	
4	CORD-CLAMP	73939-218-008	DALC-2(P.V.C)	2	
5	BUSHING-CORD	76639-202-311	IC002	1	
6	POWER-CORD	73059-861-306	1410(H05VVF 3G 1.5)	1	
7	H.V.TRANS	72862-200-510	D909STC	1	
8	L.V.TRANS	72862-200-410	D909STC	1	
9	FOOT	76073-201-210	DASF-330	4	
10	BASE-PLATE	76401-229-610	SBHG1-M T10	1	

## Exploded View & Parts List - Door Parts



No.	Description	Parts No.	Specification	Q'ty	Remark
1	DOOR "A"	77641-809-730	SILK PRINT (RE-1200(SAW))	1	
2	DOOR-SCREEN "B"	76143-205-810	GLASS T3.2	1	
3	ASSY-DOOR "E"	79291-219-510	RE-909CG	1	
4	RUBBER-FERRITE	76834-236-210	T5.8x7x1180	1	
5	DOOR" C"	76021-203-710	VALOX815	1	
6	KEY-DOOR	76464-221-910	NYLON #66	2	
7	SPRING-KEY	76674-232-020	HSWR PI1.0	1	
8	ASSY-BKT SLIDER	79294-204-111	RE-909CG	1	
9	HINGE-UPPER	76464-212-710	SBC1 T3.0	1	
10	PIN-DOOR	77364-212-610	MSWRZPC3	2	

# Exploded View & Parts List - Control Box Parts



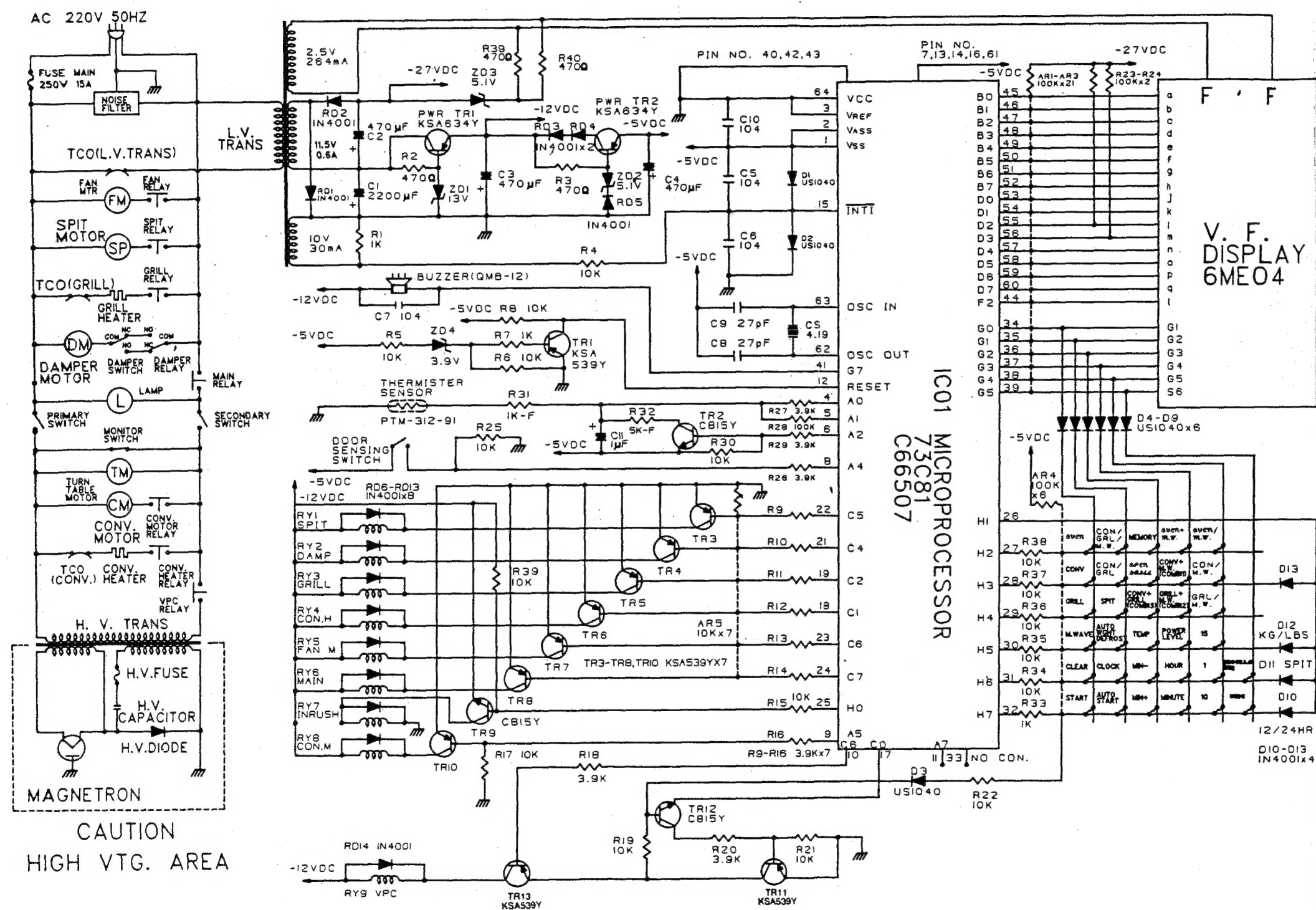
No.	Description	Parts No.	Specification	Q'ty	Remark
1	CONTROL-PANEL	77601-212-310	SILK PRINT	1	
2	BUTTON-DOOR	77623-209-610	RESIN PC	1	
3	SPRING-DOOR	76673-200-920	STS304 01	2	
4	MEMBRANE-PANEL	73552-202-810	RE-1200(SSW)	1	
5	WINDOW-DISPLAY	77653-213-830	SILK PRINT RE-1200(SSW)	1	
6	RUBBER-BUTTON	77623-207-710	SILICONE RUBBER (BLK)	1	
7	BKT-PANEL	76612-216-010	EGI T0.8	1	
8	ASSY-PCB	79199-206-700	RE-1200(SKW) INRUSH	1	

# Standard Parts List

No.	Description	Parts No.	Specification	Q'ty	Remark
S1	SCREW TAP TH	77128-240-101	2-4x10 FE, FZY	82	
S2	SCREW TAP PH	77108-530-061	2S-3x6 FE, FZY	13	
S3	NUT-FLANGE	77224-209-610	MSWR10 M4	8	
S4	FLANGE-BOLT	77094-211-410	MSWR3 M5x10	8	
S5	SCREW TAP TH	77128-240-086	2-4x8 STS	2	
S6	SCREW A	77154-203-810	2S-4x12 (TOOTHED)	7	
S7	SCREW TAP PH	77108-530-161	2S-3x16 FE, FZY	6	
S8	NUT-FLANGE	77224-209-210	MSWR10 M5	4	
S9	SCREW TAP PH	77168-530-081	2S-3x8FE, FZY	3	
S10	SCREW-PH	77008-140-081	M4x8 MSWR10	4	
S11	SCREW TAP TH	77128-240-161	2-4x16 FE, FZY	4	
S12	SCREW TAP PH	77108-540-084	2-4x8	6	
S13	WASHER-SPRING	77138-104-001	P14 FE, FZY	4	
S14	WASHER-SPRING	77318-104-001	P14 FE, FZY	2	
S15	WASHER-TOOTHED	77318-204-001	B-P14 FE, FZY	1	
S16	SUPPORT P.C.B	76659-200-578	DASS-T9N	4	
S17	SCREW TAP TH	77128-340-085	3-4x8 FE, FN	1	



## P.C.B. Circuit Diagram



Parts List - P.C.B. Circuit

Location No.	Description	Part No.	Specification	Q'ty	Remark
ZD1	DIODE ZENER	72169-406-260	UZP 13 BTP	1	
ZD2,ZD3	DIODE ZENER	72169-406-100	UZP 5.1 BTP	2	
ZD4	DIODE ZENER	72169-406-246	UZP 3.9 BTP	1	
RD1-RD11,13,14	DIODE RECTIFIER	72169-201-050	1N4001	13	
D1-D9,11,13	DIODE SIGNAL	72169-301-060	US1040TP	11	
PWR TR1, 2	POWER TRANSISTOR	72147-301-432	KSB772Y	2	
TR1,T3-T8,10,11,13	TRANSISTOR-PNP	72137-101-064	KSA539Y (TAPG)	10	
TR2, TR12	TRANSISTOR-NPN	72137-301-010	KSC815Y (TAPG)	2	
IC01	MICRO COMPUTER	72109-401-230	73C81 C66507 909CG	1	

Location No.	Description	Part No.	Specification	Q'ty	Remark
C11	C-ECECTROLITIC	71607-402-004	CE 0.4W 50V 1μF	1	
C2-C4	C-ELECTROLITIC	71607-402-298	CE 0.4W 25V 470μF	3	
C1	C-ELECTROLITIC	71607-402-296	CE 0.4W 35V 2200μF	1	
C7,C10	C-CERAMIC	71417-017-104	50V 0.1μF-Z	4	
C8,C9	C-CERAMIC	71417-065-270	CK 45SL (TAPG) 50V 27pF	2	

Location No.	Description	Part No.	Specification	Q'ty	Remark
R1, R7, R33	R-CARBON	71018-277-102	RD 1/4 TP 1K-J	3	
R2, R3, R39, R40	R-CARBON	71018-277-471	RD 1/4 TP 470J	4	
R4-R6,R8,17,19,21,22,25,30, R34-R38	R-CARBON	71018-277-103	RD 1/4 TP 10K-J	15	
R9-R14,R18,20,R16,26,27,29, R23,24,28	R-CARBON	71018-277-392	RD 1/4 TP 3.9K-J	12	
R31	R-CARBON	71018-277-104	RD 1/4 TP 100K-J	3	
R32	R-CARBON	71018-275-102	RD 124 TP 1K-F	1	
AR5	R-CARBON	71018-275-502	RD 1/4 TP 5K-F	1	
AR1-AR4	ARRAY-RESISTOR	71097-001-003	8E 103J	1	
	ARRAY-RESISTOR	71097-001-004	M08-1-100K (8E 104J)	4	

Location No.	Description	Part No.	Specification	Q'ty	Remark
X-TAL	CERAMIC RESONATOR	74537-001-001	CSA 4.19MG	1	
BUZZER	BUZZER PIEZO	74739-200-718	CS-16BP-12D	1	
RY1,RY3-RY6,RY9,17	POWER RELAY	74729-204-515	DH1PU-DC12V	6	
RY2,RY8	RELAY-3 CONTACT	74729-204-528	KM1-M12 NIL	2	
DIGITRON	DIGITRON	72319-200-433	6ME04	1	
CON1	VH-CONNECTOR	73347-001-006	B2P3N	1	
CON2	VH-CONNECTOR	73347-001-009	B3P5N	1	
CON3	CONNECTOR	73349-202-115	B6P-VH	1	
CON4	FPC CONNECTOR	73349-206-827	2635S12V000	1	
CON5	XH-CONNECTOR	73347-001-003	B4B-XH	1	
PCB SUPPORT	PCB SUPPORT	73939-217-999	DACN-9N	1	

Accessory & Option Parts

ACCESSORY

Description	Part No.	Specification	Q'ty
ASS'Y HIGH RACK	79292-215-610	MSWR3 (NI-CR COATING)	1
COOKING TRAY	76112-209-010	CERAMIC (1200GR)	1
LOW RACK	79292-210-610	MSWR3 (NI-CR COATING)	1
ASS'Y HANDLE	76113-202-820	SBC1	2
BARBECUE SPIT BAR	77363-201-110	RE-1200	1

OPTION(INRUSH)

Location No.	Description	Part No.	Specification	Q'ty	Remark
R15, R39	R-CARBON	71018-277-103	RD 1/4 TP 10K-J	2	
TR9	NPN-TRANSISTOR	72137-301-010	KSC 815Y	1	
RD12	DIODE-RECTIFIER	72169-201-050	IN4001	1	
RY7	POWER-RELAY	74729-204-515	DH1PU-DC12V	1	